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WINDOWS

Networking

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And More

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This Issue: The Amiga Effects On "Babylon 5"

Silicon Valley Loves Apple

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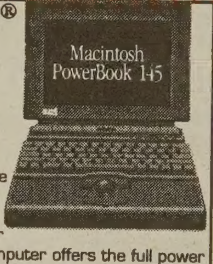

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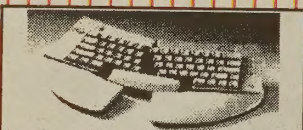

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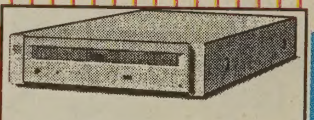

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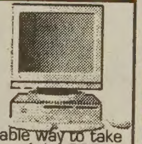

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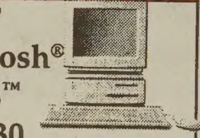

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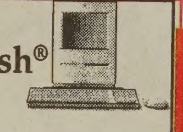

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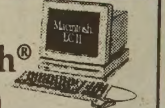

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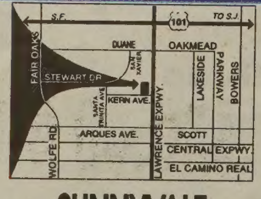

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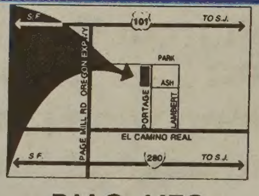

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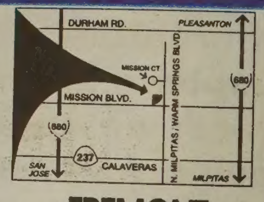

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A NOTE FROM THE EDITORS

By this time the shakeout in the PC industry is not news; fast-moving technologies and falling profit margins have taken their toll. However, some companies have managed to adapt very profitably to the changing market, and Acer America, the US subsidiary of the Taiwanese Acer Group, is a prime example. Starting on page 85, we look at the current state of Acer.

We also include several articles on products for Windows users, and in our Multimedia & Beyond section, visit the studio where *Bablyon 5*'s computer graphics are created on Amigas.

—*ME*

COVER STORY

ACER AMERICA:
Competitive Strategies For The Global PC Marketplace
By Mary Eisenhart 85

While many PC vendors, including some large multinational companies, have fallen on hard times lately, Acer America has grown and prospered. President Ronald Chwang discusses the strategies that led to this success and describes Acer's vision of the market's future.

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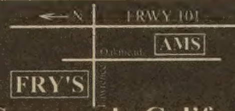

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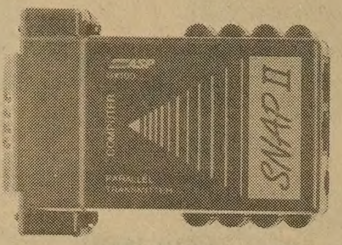

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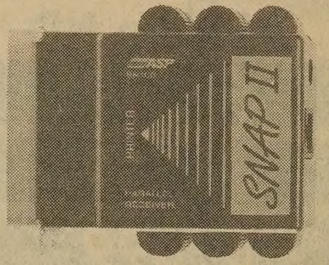

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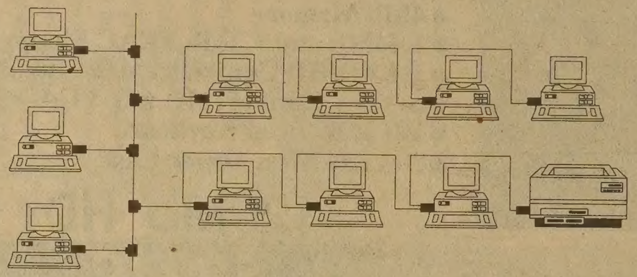

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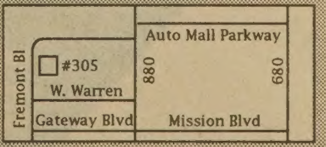

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FOUNDERS Dennis Erokan, Don Hamilton, Pat Hamilton
PUBLICATIONS BAM Magazine, Drive! Magazine, SF Downtown

40

This Vol. 10 No. 4 April 4, 1993, Whole No. 107 MicroTimes, California's Computer Magazine, is published by BAM Publications, Inc., 3470 Buskirk Ave., Pleasant Hill, CA 94523. Phone Advertising Office (510) 934-3700. Los Angeles Office, 6767 Forest Lawn Drive, Suite 110, Los Angeles, CA 90068. Phone (213) 851-8600. San Jose Office, 36 Harold Ave., Suite 2, San Jose, CA 95117. Phone (408) 244-4400. Anaheim Office, 801 East Katella Ave., Suite #210, Anaheim, CA 92805. Phone (714) 939-2809. MicroTimes™ is ©1993 by BAM Publications, Inc. Subscription rates: 13 issues, U.S.: 3rd Class $32 (Allow 3 to 4 weeks for delivery), 1st Class $60 Allow 1 to 2 weeks for delivery). MEXICO & CANADA: Surface Mail $50 (Allow 4 weeks for delivery). Air Mail $70 (Allow 1 week for delivery). OVERSEAS: Surface Mail $50 (Allow 6-10 weeks for delivery), Air Mail $165 (Allow 1 week for delivery). To receive sample issues, please send $4 ($6 for overseas) to cover postage costs. Back issues are $6 each. All rights reserved. Reproduction in whole or in part without permission of Publisher is strictly prohibited. The staff and management of MicroTimes do not advocate or encourage the use of any product or service advertised herein for illegal purposes.

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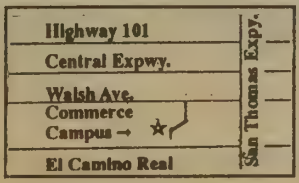

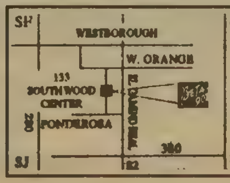

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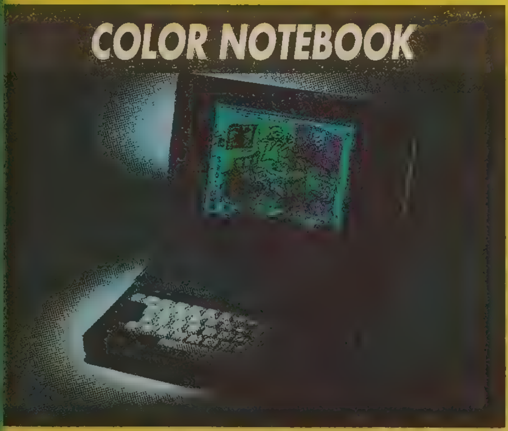

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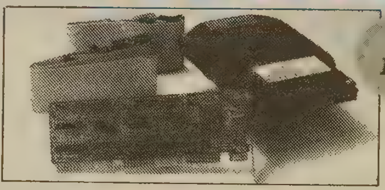

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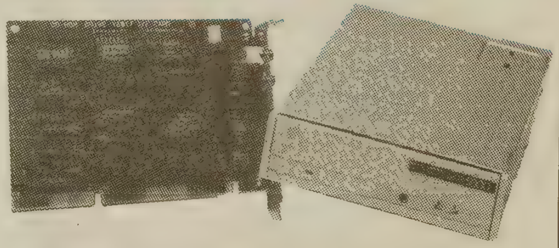

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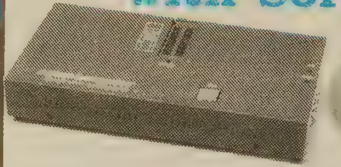

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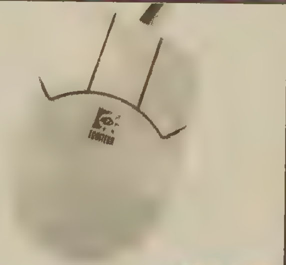

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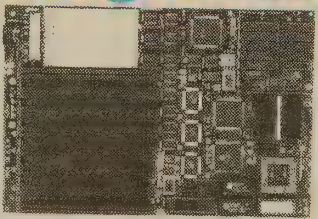

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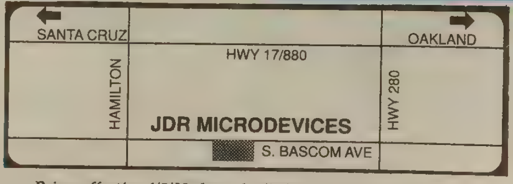

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INDUSTRY INSIGHT

Windows, DOS, NeXTSTEP, Pentium

BY PAUL HOFFMAN

MICROSOFT MAY LOSE TRADEMARK ON "WINDOWS"

The US Patents and Trademark Office has denied Microsoft's application for registered trademark on the name "Windows." According to the office (and to many people who were in the industry in 1983), the word was used generically to refer to programs that provided scrolling windows, and therefore lacked valid qualifications for trademark protection. Other companies, including Microsoft's competitor Borland, have applied to use the word "Windows" in the name of their products, and if Microsoft loses its expected appeal, there may be many different "Windows" packages on the the market, with many different functions.

> *When it introduced the concept of the Windows operating environment in 1983, Microsoft was using generic-style names for its products, such as "Word" and "File," and "Windows" was considered to be a similarly generic name.*

When Microsoft introduced the concept of the Windows operating environment in 1983, many programs had already been using the term, and many also used the same silly catchphrases (such as "we do windows") in conjunction with their products. At the time, Microsoft was using generic-style names for its products, such as "Word" and "File," and "Windows" was considered to be a similarly generic name.

Copyright © 1993 by Paul Hoffman. All rights reserved. Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on Internet (phoffman @well) or CompuServe (71545,346). He also writes popular microcomputer books.

Microsoft has six months to file a response to the Trademark Office, and can further appeal the decision if it is not changed. That appeal could take years, but many competitors may feel that they can use the term "Windows" with impunity before the case comes to trial. Given the high level of ill will that Microsoft has generated in the industry, it is likely that major competitors will try to weaken its grip on the operating system market by diluting the appeal of "Windows."

UTILITY-LOADED MS-DOS VERSION 6 DUE SHORTLY

Software vendors such as Symantec (Peter Norton) and Central Point have done so well in the past few years, Microsoft has joined the fray by including many utilities in its imminent release of MS-DOS v6.

Previously, if you wanted high-quality backup, anti-virus, and other utilities, you had to buy them from other vendors. With the new version of MS-DOS, Microsoft is forcing utility manufacturers to either come up with compelling improvements on the new bundled utilities or get out of the market.

The list of new or vastly improved features in v6 is long. Among the new utilities are:

•**Disk compression** that can effectively double the amount of data you can store on your hard disk. This feature, called DoubleSpace, will probably be the most useful feature to users who hadn't bought any utilities.

•**Backup** is never anyone's idea of a good time, but it is a necessity. Microsoft licensed Backup for MS-DOS, an easy-to-use program with good compression capabilities, and Backup for Windows from Symantec for basic backup. The Microsoft version does not back up to tape, however.

•**Anti-virus** utilities are very popular, and Microsoft licensed theirs from Central Point Software. The software is configurable so that new viruses can be detected as they are developed.

•**Startup interface** has always been terrible in MS-DOS. Although the CONFIG.SYS and AUTOEXEC.BAT files are still there, it is now much easier to have more than one setup. For example, you might want to load different programs if you boot knowing you are going to run Windows than if you are going to run a networked database manager. The new interface lets you choose the startup when you turn on the PC.

Some features exist in MS-DOS v5 but are greatly improved, such as:

•**Disk caching** can greatly speed up data access from the disk. The SmartDrive program is now much faster and can be tuned by power users to best respond to certain types of disk accesses, such as random database searches.

•**Memory management** has always been MS-DOS's weakest area, and companies such as Quarterdeck have grown by offering programs superior to Microsoft's anemic EMM386. The new version has an automatic optimizer that automatically arranges the order of software in memory to give you the most space, particularly if you are running Windows 3.1. It can also let older programs dynamically allocate memory so you don't need to waste memory on them.

•**Undeleting** files under v5 was clumsy at best, but the totally new version (licensed from Central Point Software) has better protection and a great Windows interface.

•**Computer diagnostics** have come of age with a vastly expanded MEM command, as well as official support for MSD, the system diagnostic program that tells you everything

The long-awaited chip was originally supposed to have shipped by now, but Intel has been plagued with production delays. The delay won't hurt Intel one bit, however, because it is making so much money on the 486 line.

about your memory and I/O system.

Due to various circumstances, some features that were originally slated for MS-DOS v6 have been pulled. The package was originally meant to include software to link DOS PCs to Windows for Workgroups networks, and to allow easy exchange of electronic mail. However, Microsoft has been shocked by the extremely low sales of Windows for Workgroups due to the worries of corporate managers that the product will give their users too much flexibility. In response, Microsoft took out the client software from the beta-test copies of v6. Further, Microsoft also removed a small part of the disk compression software, probably in response to the Stac lawsuit reported in this column last month.

The number of utilities in v6 virtually assures Microsoft of a huge market for the product, regardless of how much it costs to upgrade. Within six months, at least half of the active MS-DOS users will probably have upgraded to v6, even if they already own the third-party utilities that are included in the package, just so they can say they've got the Microsoft-labeled features. Microsoft is already compiling a feature list for v7, thereby proving wrong the industry pundits who have for years been saying "DOS is dead."

NEXT DUMPS HARDWARE BUSINESS, HOPES TO SAVE ITSELF IN SOFTWARE

After years of insisting that a big surge of buyers was just around the corner, NeXT Inc. admitted that it wasn't ever going to make money in the UNIX hardware business and dumped its line of computers and peripherals. Instead, NeXT will focus on NeXTSTEP software, a UNIX operating system with a very attractive user interface and built-in tools to make programming much faster than on traditional UNIX platforms. The move caused the company to lay off more than half of its remaining employees, and NeXT will probably sell its state-of-the-art manufacturing plant in Fremont to another hardware or software vendor.

NeXT started with a splash three years ago, promising to bring easy-to-use UNIX to the desks of the world with its custom hardware and software. Instead, it sold only fifty thousand systems and was never considered seriously. However, most analysts who evaluated the NeXT system were impressed with NeXTSTEP. By becoming an operating system company, NeXT will have to give up its pretensions of exclusivity and go head-to-head with giants such as Microsoft and Novell in the still-unproven PC workstation market.

NeXT is currently in the last phases of porting NeXTSTEP to the Intel processors, and expects to release it commercially in May on specific high-end hardware. NeXT has won support from PC companies such as Dell, NEC, AST, and Hewlett-Packard. While everyone has big hopes for Taligent and Cairo, future products from Apple/IBM and Mi-

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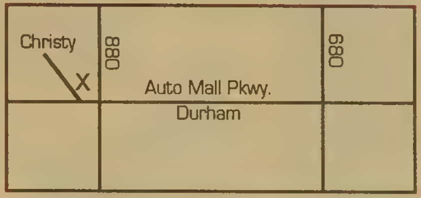

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crosoft, NeXT hopes to capitalize on having a solid, proven (to a small extent), friendly client/server environment available soon. Since no one expects Taligent or Microsoft to have a real product for two years, NeXT may have a distinct advantage.

NeXTSTEP for the PC will be introduced at the (probably last) NeXTWORLD Expo at the end of May. That show may be the last time current NeXT hardware users can get together, and they will undoubtedly have to endure more posturing from Steve Jobs about how he knew all along that this was the best move for NeXT. Jobs has assured current NeXT users that all the programs they've written for the NeXT machine will be easily portable to NeXTSTEP running on PCs, so there may be a silver lining to the announcement that they can no longer buy NeXT systems to go with their current ones.

For NeXT to be successful in the new market, it will have to convince businesses that developing programs in NeXTSTEP is so much faster than current technology that it's worth their investment. Although "object-oriented technology" has become a very popular phrase in the computer industry, far fewer companies have committed to it than was expected a few years ago. To those companies which are committed to it, NeXTSTEP will be attractive for particular groups.

Although NeXT lost a huge amount of money over the past few years on its hardware manufacturing, it could conceivably recoup its losses by having started early in the software side. Then again, NeXTSTEP could be another boondoggle dragged down by the same bad management that kept the NeXT hardware system alive years longer than it should have.

INTEL DELAYS RELEASE OF PENTIUM CPU

In a move that will certainly raise the price of mid- and high-end PCs, Intel has further delayed the introduction of the Pentium CPU until the end of May. The long-awaited chip was originally supposed to have shipped by now, but Intel has been plagued with production delays. The delay won't hurt Intel one bit, however, because it is making so much money on the 486 line. In fact, some companies have suggested that Intel is purposely delaying the introduction of the Pentium to milk the maximum profits from PC buyers who choose the 486.

Intel did not disclose the reasons for the delay, but companies that have preproduction samples of the chip believe the delay is mostly due to heat dissipation problems on the chip. Pentium will be the hottest-running chip commonly available, and PC manufacturers are having to design more efficient air circulation systems for the Pentium computers. The currently prevalent design has the CPU under the hard drive, where air circulation is minimal and there is extra heat from the drive itself. Either the chip will need significant cooling attachments, the system will need a more powerful fan, or both.

The delay will also help Intel appear more honest about its speed claims for Pentium. Software companies have advised Intel to be careful about saying how much faster programs will run on a Pentium CPU if they haven't been optimized. In contrast to Intel's early statements, some software companies are saying that programs that are not optimized for Pentium may not get any speed increase over current 486 CPUs. If this is true, it could certainly hurt initial sales of Pentium systems. Intel hopes that all major software vendors recompile their programs in the next few months, and has even offered them free public relations at the main Pentium announcement if they do.

Others have pointed out that Intel wants lots of Pentium systems available at the announcement, and that large customers like IBM are insisting on having more chips available before they announce their systems. In order to make more CPUs available for PCs, Intel has delayed the manufacturing of the Pentium Overdrive chips until 1994, much to the consternation of companies like DEC who have been putting Overdrive sockets on their systems for almost a year. Intel looks on the Overdrive market as much less important than the basic CPU market, and may even decide to push the Pentium Overdrive further out than a year from now. In the interim, Intel is expected to come out with a 99MHz 80486DX3 that may run almost as fast as Pentium for programs that have not been recompiled. ■

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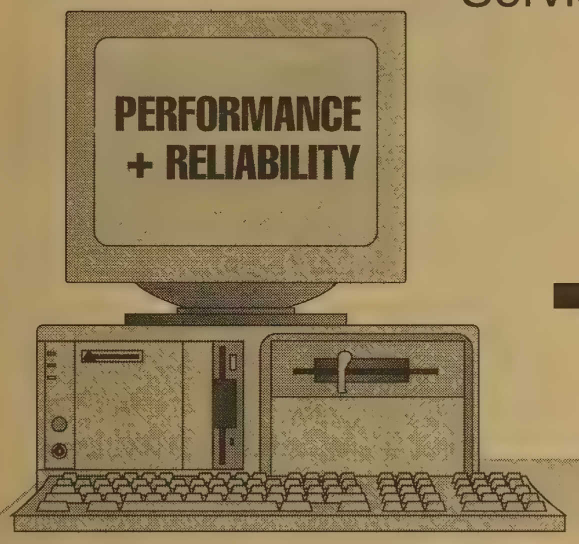

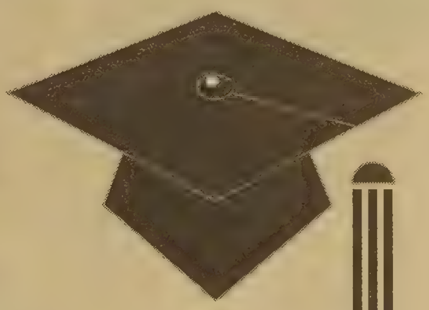

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Symantec CEO, VP Indicted In Trade Secrets Case

A Santa Cruz county grand jury indicted Gordon Eubanks and Eugene Wang of Symantec for theft of trade secrets from Borland, Wang's previous employer. As described previously in this column, Borland has sued Eubanks and Symantec for civil damages. Both men pleaded innocent to both the civil and criminal charges.

The criminal charge is almost unprecedented in the software industry, and the result may change the way that companies hire top managers from their competitors. Further, it could also change the way in which people use electronic mail, since much of the initial evidence in the criminal case comes from electronic mail sent between the two defendants while Wang was still an employee at Borland. It is widely expected that the defendants will try to suppress that evidence based on federal laws concerning use of electronic mail [see Mitch Kapor's "Computer Spies," Issue #106, for further discussion on this matter—eds.]

continued on page 250

◆ MACINTOSH AND PC COMPATIBLE ◆

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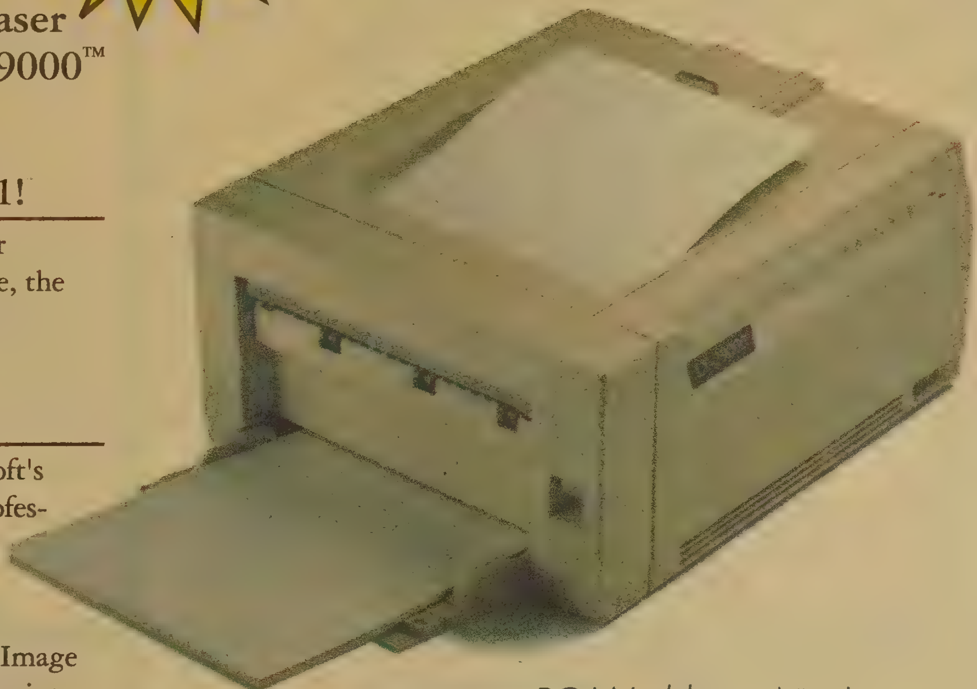

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Postscript Printer Comparison Chart

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NEC Model 95	Minolta	NO	YES	YES	NO	$1,450	$455
QMS-PS 410	Canon	NO	YES	YES	NO	$1,480	$485
HP IIIp w/Postscript	Canon	NO	NO	YES	NO	$1,589	$594
Apple Personal NTR	Canon	YES	YES	YES	NO	$1,679	$684
IBM 4029/8P	Lexmark	NO	NO	NO	NO	$1,695	$700

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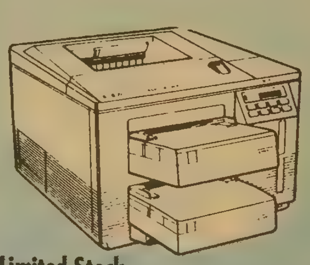

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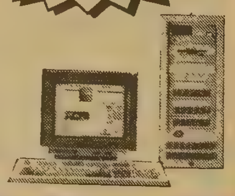

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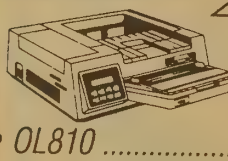

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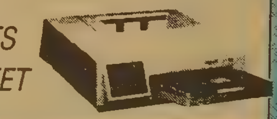

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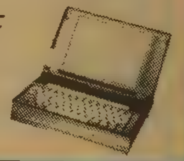

IBM Model 90

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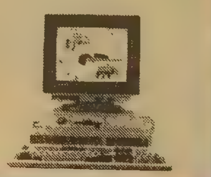

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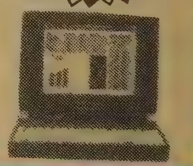

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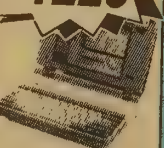

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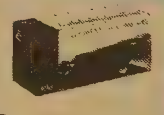

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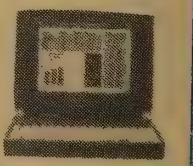

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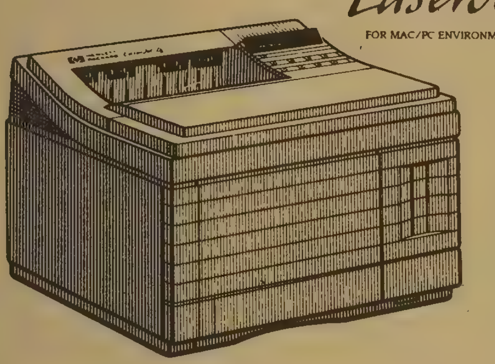

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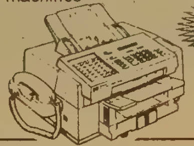

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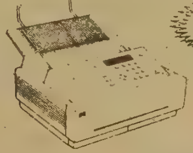

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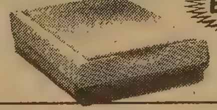

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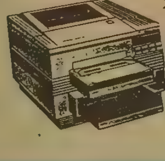

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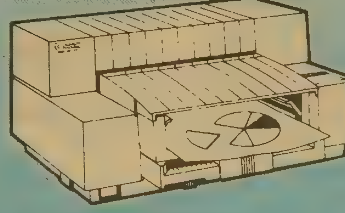

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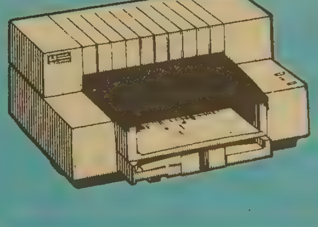

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It's 11 O'Clock In The 20th Century

Do You Know Where Your Futures Are?

BY JIM WARREN

REALIZABLE FANTASIES

These columns concern the realistic near future, and how we can direct it—if we *work* on it. This particular column offers vague generalities followed by action specifics.

THE FUTURE IS LIKE THE PAST—ONLY BETTER

In the 1890s, the Industrial Revolution was well under way, and excited technoids eagerly tinkered with mysterious, cantankerous, malfunctioning, ill-designed, hard-to-steer horseless carriages. Most folks didn't know how to use them; many were suspicious of them; some feared them. Some still do; the vehicularly impaired are still with us.

Naive lawmakers passed numerous *bizarre* laws to control these dangerous machines. Many horse sheriffs had difficulty dealing with criminals who began using these "high tech" machines for "innovative" crime, until the cops came up to speed in the new technology.

Gas buggies' "obvious" benefit to society was that they would pull wagons at speeds several times faster than even the fastest horse—*Wow!* In fact, their dominant impact has been to allow people to live far distant from their work, creating the unpredicted suburbs—and air pollution, day trips to Yosemite, asphalt open space, miles-long traffic jams, radar revenues, etc. [Noted by Nobel laureate Herbert Simon.]

This new transportation technology created great benefits, newfound freedoms, expanded work and lifestyle alternatives—and numerous unintended consequences, including a rash of oppressive monopolies, political graft, and government giveaways to the rich and the powerful.

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HORSELESS CARRIAGES OF THE 21ST CENTURY

In the 1990s, the Information Age is well under way, and excited technoids are again eagerly tinkering with mysterious, cantankerous, malfunctioning, ill-designed, hard-to-steer information machines that run over local, national, and global data highways. Most folks still don't know how to use them; many remain suspicious of them; some continue to fear them. And it is predictable that some folks will remain computer-impaired for the rest of their lives.

Often-naive lawmakers are passing well-meaning legislation to control real and fantasized computer threats, continuing to illustrate the Law of Unintended Consequences. Law enforcement is again having temporary difficulty with "high tech" crime—which, in a few years, will seem no more innovative than using a car to get away from a bank robbery.

This new "transportation" technology (transporting information and communication globally) is already creating newfound freedoms, expanded work and lifestyle alternatives, and beneficial decision-making tools. It is also beginning to generate its share of oppressive monopolies, political graft (now politely called "lobbying"), and new government giveaways to the rich and the powerful.

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False information can be quickly refuted; propaganda promptly balanced; expertise and experience, which each of us has, can be quickly sought and easily shared.

> **A watered-down "GPO Access" bill, HR5983, was written with "considerable input from the commercial data vendors, through the Information Industry Association (IIA)." The new bill restricts GPO authority to only those public records volunteered by their originating agency, plus those normally published by the GPO—a small subset of computerized federal public records.**

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Sovereignty ultimately rests with "We, the People." With these information and communication tools available to us all, we can finally exercise our sovereignty intelligently—rather than as boob-tube drones directed by sound-bite propagandists.

All it takes is time and effort. And that includes acting now, to ensure and enhance economical/competitive access to public records against high-priced monopolists.

CONGRESS IS GUTTING PUBLIC-ACCESS LEGISLATION

This information blitzed across the Internet, a few days before our press deadline, from James Love, director of the Ralph Nader group's Taxpayer Asset Project.

The federal government is the largest collector of public information, and is rapidly computerizing most of it. Last years, the WINDO (HR2772) and Gateway-to-Government (S2813 by then-Senator Al Gore) bills would have initiated one-stop online access to federal databases through the GPO (Government Printing Office; "printing"—a quaint term!). Distribution would have been free to the nation's fourteen hundred libraries that serve as depositories for government documents in each congressional district, and would have been low-cost for home and business users.

Notably, last year's bills would have limited user fees to the "incremental cost of dissemination of the information." Presently, many federal—and state—agencies generate substantial profit from their computerized data products and services, e.g. the NTIS (National Technical Information Service).

BELTWAY BANDITS ATTACK THE CITIZEN'S INFORMATION CARAVAN

Instead of continuing WINDO/Gateways in this Congress, a watered-down "GPO Access" bill is taking their place, modeled after last year's HR5983. Love reports that HR5983 was written with "considerable input from the commercial data vendors, through the Information Industry Association (IIA)."

Funding is understandably one of the issues—but a tiny tidbit of printing funds could be redirected to underwriting this paperless, pollutionless alternative. E.g., Gore's old bill would have provided $13 million over two years—peanuts in Washington terms. (E.g., what's the fully encumbered cost for a single military band for two years?)

The new bill restricts GPO authority to only those public records volunteered by their originating agency, plus those normally published by the GPO—a small subset of computerized federal public records. It also removes last year's authority for the GPO to reimburse agencies for agency expenses in providing electronic data through the GPO.

And the new bill *certainly* doesn't require nationwide, low-cost access to the Federal Elections Commission's (FEC) online database of campaign contributions, nor to the House's LEGIS system that gives its Inside-the-Beltway users online access to the full text of all bills before Congress. More properly titled, "GPO Access Repression," this bill is degraded in still other ways from the 1992 bills. So far, the Clinton/Gore administration seems to have had little input to these undesirable revisions.

The excuse is money. The reality is pressure from the Beltway lobbyists—agency profiteers and high-markup information purveyors.

PARTICIPATE IN YOUR GOVERNMENT IN ACTION

Direct comments and information requests to: Sen. Wendell Ford (D) and Sen. Ted Stevens (R), Senate Committee on Rules and Administration, (202)224-6352; Rep. Charlie Rose (D) and Rep. Bill Thomas (R), House Committee on House Administration, (202)225-2061; and James Love, Taxpayer Assets Project, 12 Church Rd., Ardmore, PA 19003, (215)658-0880. Email: *love@essential.org.*

SPEAKING OF COMPUTERS AND SOCIETY

The author often speaks and lectures about technology, government, freedom, and privacy, and also about personal computing's history and futures. In April, he will be chairing a session on "Cryptography: Technology and Policy Issues" at the IEEE Computer Society's Asilomar Microcomputer Workshop, and will join the Electronic Frontier Foundation's Washington Counsel, Shari Steele, in giving a half-day seminar on these issues at the High Tech Criminal Investigators Association (HTCIA) spring workshop. Contact your professional organizations for details, if you work in law enforcement or computing. ■

Warren founded InfoWorld, *Wireless Digital Initiative, Inc., and one of the nation's largest public microcomputer conventions. He was founding host of PBS's* Computer Chronicles, *founding editor of* Dr. Dobb's Journal, *and has chaired various trade and professionals' organizations. He holds graduate degrees in computing (Stanford), medical information science (UC Medical Center), and mathematics & statistics. He has been a computer professional since 1968, and was a mathematics teacher and professor for ten years before that.*

He organized and chaired the landmark First Conference on Computers, Freedom & Privacy (1991), sponsored by a dozen nonprofit civic, professional, and industry organizations, and received one of the first Electronic Frontier Foundation Pioneer Awards (1992). He is a member of the board of directors of Autodesk, Inc., and also chairs the Communications Committee of the California Public Records Act Reform Coalition.

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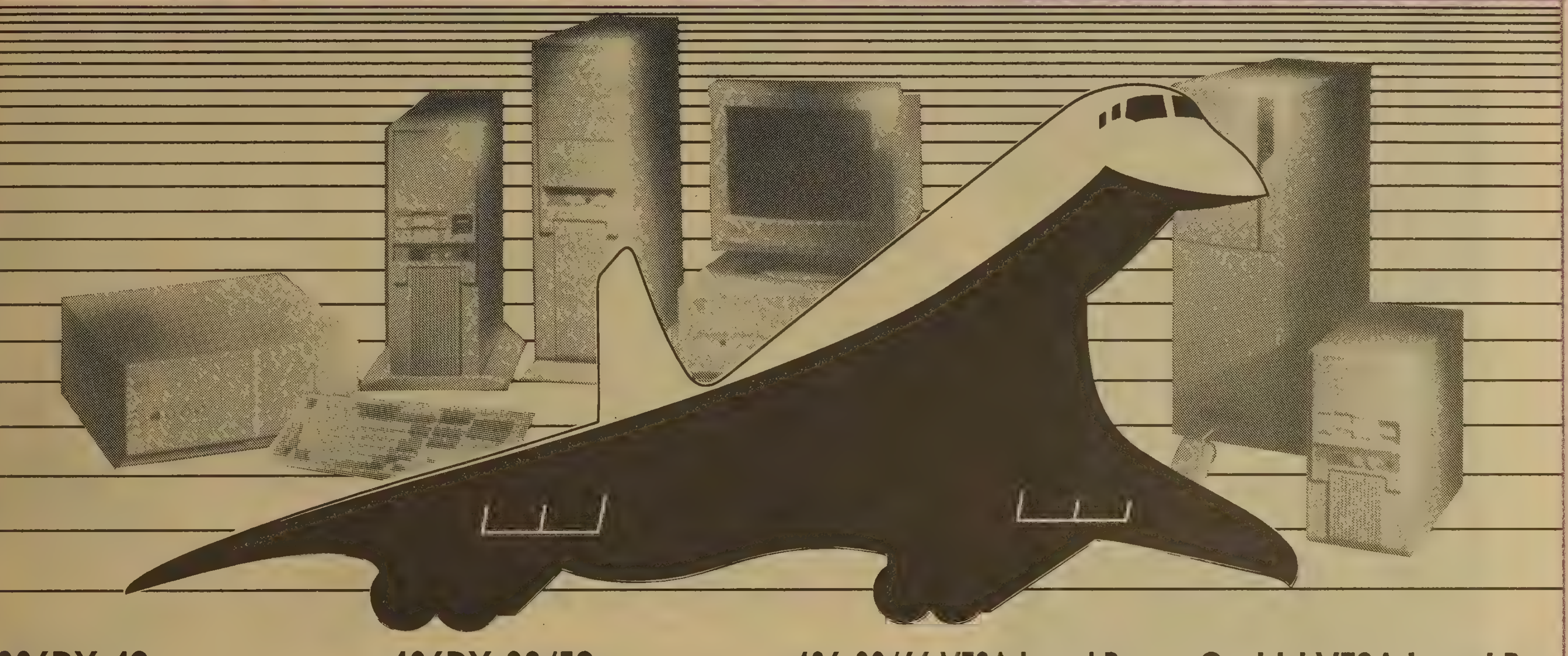

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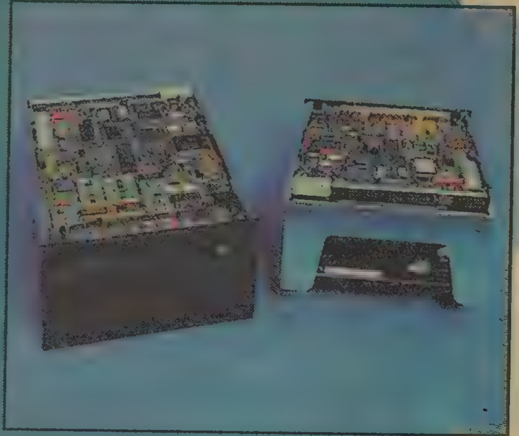

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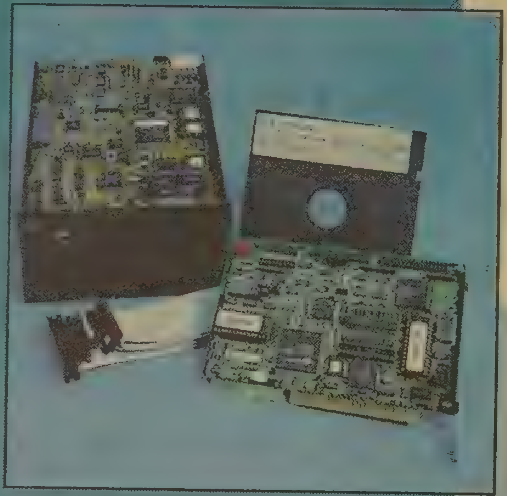

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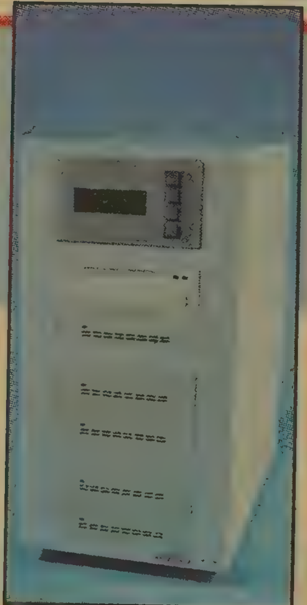

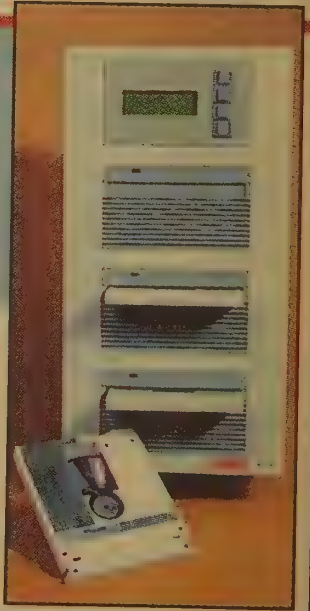

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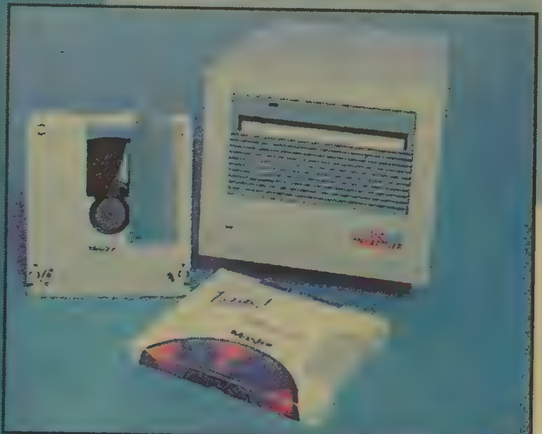

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From The Frontier

Software Felonies

BY MITCHELL KAPOR

It doesn't take much to persuade Congress to jack up the penalties for white-collar crime, and last fall's amendments to the Copyright Act were no exception. With a little prodding from the Software Publishers Association, legislators made a felony of possession of ten unauthorized copies of a program, collectively valued at as little as $2500. The new law is a powerful bargaining chip for an industry that has learned to enforce its property rights through intimidation. A little too powerful, I'll wager. Under the new law, just about any computer department manager could be charged as a felon.

A NEW BIMONTHLY COLUMN

There's no doubt that software companies need help enforcing their property rights against brazen counterfeiting schemes, as a recent action brought by Microsoft shows. Its civil suit against Taiwanese defendants alleges that hundreds of thousands of counterfeit copies of the MS-DOS operating system were sold to unsuspecting customers. Armed with seizure orders, attorneys for Microsoft staged elaborate raids on secret warehouses in southern California, carting off truckloads of contraband. Use of the new criminal provisions of the copyright law makes sense in an extreme situation such as this.

But should it be a felony to make ten unauthorized copies of a program? In public speeches on this topic, I routinely ask members of the audience how many of them will stand up to declare they have no unauthorized copies on their hard disks. Only a tiny minority will do so. This suggests to me that, under the new law, any manager with a handful or more of employees could be prosecuted and sent to jail.

Software producers, of course, have to protect themselves against more than the counterfeiters. The software association estimates that its members lose between $1 billion and $2 billion a year in revenue from customers who buy fewer copies of business software than they should.

At Lotus, we tried to solve this problem by adopting technical measures to restrict the copying of files. As I learned to my chagrin, this approach had the unacceptable consequence of also restricting legitimate uses by paying customers. Nowadays very few software producers use copy protection devices. They're too likely to be broken by serious hackers and too likely to alienate innocent users. As a simple technical matter, there is no barrier today to anyone walking off with a $500 product in a shirt pocket, or to a corporate software customer that wants to use more copies than it is willing to pay for.

But the solution to this problem is not a rigid prohibition on copying. Even in the overwhelming majority of honest companies, including many with stringent internal policies, employees routinely make copies of their applications for use on portable and home computers, temporary copies for a coworker, multiple backup copies, and the like. Unauthorized copies proliferate. Careful lines must be drawn, dividing software duplication into three different grades of behavior: totally innocent copying, unfair use that might give rise to a lawsuit, and criminal piracy. The new anti-piracy law fails to make these distinctions.

The software association claims it has no intention to use the criminal law to enforce essentially civil claims against customers who make and use multiple copies. "I don't need to call the FBI to beat on corporations," says Ken Wasch, the association's executive director. "There's absolutely no intention of criminalizing the inadvertent copier in a corporation. We have a very adequate civil remedy." By its own accounting, Wasch's group has done very well in civil court.

Nonetheless, with these stiff new provisions in place, I can't imagine that sooner or later the felony criminal provisions won't be used, in practice or as threat, against less than obviously flagrant violators. Here's one scenario: The software association will knock politely and ask to review XYZ Corp.'s computers for illegal copies. If XYZ refuses to allow the audit, the enforcers can now do more than file a civil action. They can threaten to call in the Department of Justice for a criminal investigation.

This law is simply prone to abuse. It won't stop piracy, nor will it contribute to a new ethic that respects the hard work and research dollars put into application software.

Software vendors could take one step in the right direction by rewriting their license agreements to be more realistic. Most licenses don't permit a user to install the same copy of a product twice under any circumstances, except to make a backup. However, a few companies permit customers to make multiple installations of a single copy of software as long as only one copy is in use at any time.

With more executives using a desktop computer in the office and a notebook computer on the road, broadening the terms of acceptable use just represents common sense. It would also go a long way to ease tensions with customers who find themselves uncomfortable at the prospect of being branded as felons.

With more executives using a desktop computer in the office and a notebook computer on the road, broadening the terms of acceptable use just represents common sense. It would also go a long way to ease tensions with customers who find themselves uncomfortable at the prospect of being branded as felons.

We live in a difficult era in which, as Stewart Brand puts it, information wants to be free, yet it also wants to be expensive. Until both vendors and users sincerely acknowledge this paradox, efforts to reduce piracy are likely to do as much to foster conflict and discomfort for legitimate users as they do to benefit software producers. ■

Copyright © 1993 by Mitchell Kapor. All rights reserved. First published in the February 15, 1993, issue of Forbes. *Mitch Ratcliffe, editor-at-large of* MacWeek, *provided research assistance for this article.*

Silicon Graphics: The Presidential Visit

BY BROCK N. MEEKS

ON FEBRUARY 22, PRESIDENT BILL CLINTON AND VICE PRESIDENT AL GORE VISITED THE HEADQUARTERS OF SILICON GRAPHICS IN MOUNTAIN VIEW. THE FOLLOWING REMARKS ARE EXCERPTED FROM A TRANSCRIPT OF THE EVENT PROVIDED VIA THE COURTESY OF THE INTERNET SOCIETY WHITE HOUSE PRESS RELEASE GOPHER SERVICE.

President Clinton:

I wanted to come [because] I think the government ought to work like you do. [Applause]. And before that can ever happen we have to be able to get the people, the Congress, and the press who have to interpret all this to the people to imagine what we're talking about.

I basically believe my job as President is to try to adjust America in good ways so that we can win in the twenty-first century, so that we can make change our friend and not our enemy.

[SGI president] Ed [McCracken] said that you plan your new products knowing they'll be obsolete within twelve to eighteen months, and you want to be able to replace them. We live in an era of constant change. And America's biggest problem, if you look at it through that lens, is that for too many people change is an enemy, not a friend. I mean, one reason you're all so happy is you found a way to make change your friend, right? Diversity is a strength, not a source of division, right? [Applause.] Change is a way to make money, not throw people out of work, right?

If you decentralize and push decisions made down to the lowest possible level, you enable every employee to live up to the fullest of their ability. And by giving them a six-week break every four years, you don't force them to make these sharp divisions between their work life and their private life. It's sort of a seamless web. These are things we need to learn in America, and we need to incorporate even into more traditional workplaces.

In order to make this whole thing work we're going to have to make the government work differently. Example: We cut the White House staff by 25% to set a standard for cutting inessential spending in the government. But the work load of the White House is way up. We're getting all-time record telephone calls and letters coming in, and we have to serve our customers, too. Our customers are the people that put us there, and if they have to wait three months for an answer to a letter, that's not service.

When we took office, I walked into the Oval Office—it's supposed to be the nerve center of the United States—and we found Jimmy Carter's telephone system. [Laughter.] No speaker phone, no conference calls, but anybody in the office could punch the lighted button and listen to the President talk. [Laughter.] So that I could have the conference call I didn't want, but not the one I did. [Laughter and applause.]

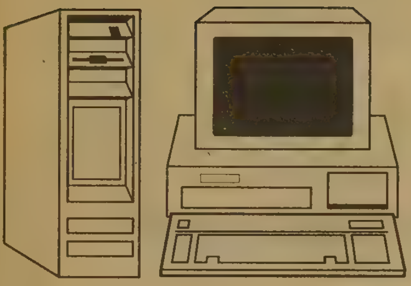
Then we went down into the basement where we found Lyndon Johnson's switchboard—[Laughter] true story—where there were four operators working from early morning till late at night. Literally, when a phone call would come and they'd say, "I want to talk to the Vice President's office," they would pick up a little cord and push it into a little hole. [Laughter.] That's *today*—right?

We found procedures that were so bureaucratic and cumbersome for procurement that Einstein couldn't figure them out, and all the offices were organized in little closed boxes—just the opposite of what you see. In our campaign, however, we ran an organization that was very much like this. Most decisions were made in a great big room in morning meetings that we had our senior staff in, but any 20-year-old volunteer who had a good idea could walk right in and say, "Here's my idea." Some of them were very good and we incorporated them.

We had a man named Ellis Mottur who helped us to put together our technology policy—he was one of our senior citizens; he was in his fifties. [Laughter.] And he said, "I've been writing about high-performance work organizations all my life. And this is the first one I've ever worked in and it has no organizational chart. I can't figure out what it looks like on paper, but it works."

I think a major part of my missions is to literally change the way the national government works, spends your tax dollars, so that we can invest more and consume less and look toward the future. And that literally will require rethinking everything about the way the government operates.

The government operates so much to keep bad things from happening that there's very little energy left in some places to make good things happen. If you spend all your time trying to make sure nothing bad happens there's very little time and money and human energy



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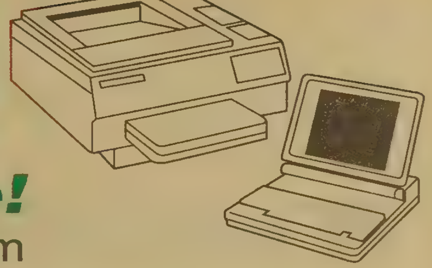

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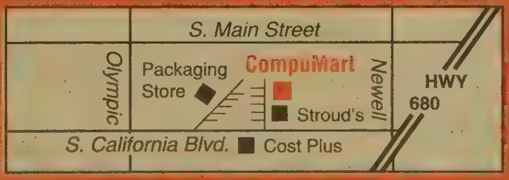

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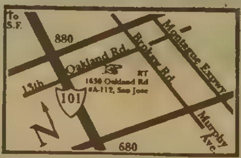

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●●●

Audience question:

Silicon Graphics has entered the supercomputer arena. Supercomputers are subject to very stringent and costly export controls. Is part of your agenda to review the export control system, and can industry count on export regulations that will keep pace with technology advances in our changing world?

Vice President Gore:

Let me start off on that. As you may know, the President appointed, as the Deputy Secretary of Commerce, John Rollwagon, who was the CEO at Cray. He and Ron Brown, the Secretary of Commerce, have been reviewing a lot of procedures for stimulating US exports around the world. And we're going to be a very export-oriented administration.

However, we are also going to keep a close eye on the legitimate concerns that have in the past limited the free export of some technologies that can make a dramatic difference in the ability of a Gaddafi or a Saddam Hussein to develop nuclear weapons or ICBMs.

Now, in some cases in the past, these legitimate concerns have been interpreted and implemented in a way that has frustrated American business unnecessarily. There are, for example, some software packages that are available off the shelves in stores here that are, nevertheless, prohibited from being exported. And sometimes that's a little bit unrealistic.

On the other hand, there are some in business who are understandably so anxious to find new customers that they will not necessarily pay as much attention as they should to what the customer might use this new capacity for. And that's a legitimate role for government, to say, "Hold on, the world will be a much more dangerous place if we have fifteen or twenty nuclear powers instead of five or six; and if they have ICBMs and so forth."

So it's a balance that has to be struck very carefully. And we're going to have a tough nonproliferation strategy while we promote more exports.

President Clinton:

If I might just add to that—the short answer to your question, of course, is yes, we're going to review this. And let me give you one example. Ken Coleman, Senior Vice President of Administration, told me last night at dinner, "If we export substantially the same product to the same person, we'll have to get a permit every time we want to do the same thing, over and over again. They always give it to us, but we have to wait six months and it puts us behind the competitive arc." Now, that's something that ought to be changed, and we'll try to change that.

We also know that some of our export controls, rules, and regulations, are a function of the realities of the Cold War which aren't there anymore. But I just want to reemphasize what the Vice President said so well: Our biggest security problem in the future may well be the proliferation of nuclear and nonnuclear, like biological and chemical, weapons of mass destruction to small, by our standards, countries, with militant governments who may not care what the damage to their own people could be. So that's something we have to watch very closely.

But apart from that, we want to move this much more quickly and we'll try to slash a lot of the time delays where we ought to be doing these things.

●●●

Audience question:

One of the things that Silicon Graphics has been really successful at is selling into the international markets. Approximately 50% of our revenues come internationally, including a substantial market in Japan. What types of programs does your administration plan to help the high-growth companies of the '90s sell to the international markets?

President Clinton:

Two things. First of all, we intend to try to open new markets and new markets in our region. To keep America growing, I believe high-growth companies are going to have to sell south of the border more. And to do that we have to negotiate trade agreements that will help to raise incomes in those countries even as we are growing. That's why I support, with some extra agreements, the NAFTA agreement; and why I hope we can have an agreement with Chile, and hope we can have an agreement with other countries like Argentina that are making a serious effort to build market economies. Because we want to build new markets for all of you.

With Japan, I think what we have to do is to try to continue to help more companies figure out how to do business there and keep pushing them to open their markets. I don't want to close American markets to Japanese products, but it is the only nation with which we have a persistent and unchanging structural deficit.

With Europe, we sometimes are in surplus, we're sometimes in deficit, but it's a floating thing. So it's more or less in balance. With developing nations like Taiwan and Korea, those countries had big surpluses with us, but as they became richer they brought them down, so that we're more or less in balance. We have our biggest trade relationship with Canada and we're more or less in balance.

I think we should devote more government resources to helping small and medium-size companies figure out how to trade, because that's what the Germans do with such great success and why they're one of the great exporters of the world. They don't waste a lot of money on the real big companies that have already figured it out, but they have extra efforts for small and medium-size companies to get them to think global from the beginning of their endeavors. And I think we're going to have to do more of that.

●●●

Audience question:

In addition to concerns about the economy, Silicon Graphics employees are also concerned about the environment. Your economic plan does a great job of promoting R&D investment. Are there any elements that are specifically targeted to promote the application of Silicon Graphics' technology to environmental-friendly initiatives?

President Clinton:

We devoted a lot of time and attention to that for two reasons. One is the environment needs it. Secondly, we think it's wonderful economics, because I believe that all these environmental opportunities that are out there for us represent a major chunk of what people who used to be involved in defense technologies could be doing in the future if we're going to maintain a high wage base in America.

So I'd like for the Vice President to talk a little about the specifics that we're working on.

Vice President Gore:

That goal is integrated into the technology plan as one of our key objectives. The Japanese and the Germans are now openly saying that the biggest new market in the history of world business is the market for the new products, technologies, and processes that foster economic progress without environmental destruction.

Some have compared the drive for environmental efficiency to the movement for quality control and the quality revolution in the '60s and '70s. At that time, many companies in the United States felt that the existing level of product quality was more or less ordained by the forces of supply and demand and it couldn't be improved without taking it out of the bottom line. But the Japanese, taking US innovations from Dr. Deming and others, began to introduce a new theory of product quality and simultaneously improved quality, profits, wages, and productivity.

The environmental challenge now presents us with the same opportunity. By introducing new attention to environmental efficiency at every step along the way, we can simultaneously reduce the impact of all our processes on the environment, improve environmental efficiency, and improve productivity at the same time. We need to set clear specific goals in the technology policy, in the economic plan.

(l-r) SGI President Ed Mc Cracken, President Bill Clinton, Vice President Al Gore

Both the stimulus and the investment package focus a great deal on environmental cleanup and environmental innovation. And whereas we've talked a lot about roads and bridges in the past, and they're a big part of this plan also, we're putting relatively more emphasis as well on water lines and sewer lines and water treatment plants and renovating the facilities in the national parks and cleaning up trails; taking kids from inner cities and putting them to work cleaning up trails in national parks, for example, as part of the summer jobs programs.

So you'll find when you look at both the technology plan and the economic plan an enormous emphasis on the environment. [Applause.]

• • •

Vice President Gore:

I want to give you just a few of the details of this technology policy. Some of the special interests who oppose the President's plan are saying to the American people, don't pass this plan because everything is fine just the way it is. Well, anybody who says everything is fine with our economy hasn't been to California lately. We need some change. We can't stand the status quo. [Applause.]

California has to participate in the recovery in order for America to have a recovery that is worth the name recovery. So that we can start creating new jobs. And many of the high-skill, high-wage jobs of the future are in technology areas. And that's why a key component of the President's economic plan is the technology policy that we're announcing here today.

It starts with an appreciation of the importance of continuing basic R&D, because that's the foundation for all of the exciting products that this company and others like this company come up with. It continues with an emphasis on improving education, because in order for companies like this one to survive and prosper in the world economy, we as a nation have to have highly educated, well-trained young men and women coming out of colleges on to campuses like this.

We also have to pay attention to the financial environment in which companies like this have to exist. In order for this company to attract investors for the kind of products that you are building here, you have got to be able to tell them that the interest rates are not going to be too high if they're borrowing money to invest; you've got to be able to tell them, look, President Clinton is making permanent the R&D tax credit, for example, and there are going to be specific new provisions in the law to encourage investment in high-risk ventures that are very common in the high-technology area.

And then this plan makes specific investments in something called the national information infrastructure. Now, infrastructure is a five-dollar word that used to describe roads, bridges, water lines, and sewer lines. But if we're going to compete in the twenty-first century, we have to invest in a new kind of infrastructure.

During the Industrial Revolution, the nations that competed most successfully were often ones that did the best job of building deep-water ports; those that did the best job of putting in good railway systems to carry the coal and the products to the major centers where they were going to be sold and consumed. But now we are seeing a change in the definition of commerce. Technology plays a much more important role. Information plays a much more important role.

And one of the things that this plan calls for is the rapid completion of a nationwide network of information super highways. [Applause.] So that the kind of demonstrations that we saw upstairs will be accessible in everybody's home. We want to make it possible for a school child to come home after class and, instead of just playing Nintendo, to plug into a digital library that has color-moving graphics that respond interactively to that child's curiosity.

Now, that's not the only reason to have such a network or a national information infrastructure. Think about the importance of software. If we could make it possible for talented young software writers here in Silicon Valley and elsewhere in the United States to sell their latest product by downloading it from their desk into a nationwide network that represented a marketplace with an outlet right there in that person's home or business. We would make it possible for the men and women who are interested in technology jobs here in the United States to really thrive and prosper.

And in keeping with one of the questions that was asked earlier about how we can export more into the world marketplace and how we can be more successful in world competition—one way is by making our own domestic market the most challenging, most exciting, with the most exacting standards and levels of quality of any nation in the world. And then we will naturally roll out of our domestic marketplace into the world marketplace and compete successfully with our counterparts everywhere in the world.

The President's economic program is based on cutting spending; reducing the deficit over time, including with some revenue increases that are progressive and fair; and also investing in those things which we know will create good, high-wage, high-skilled jobs here in the United States. You all are pioneers in a sense, showing how that can be accomplished. We want to make it easier for working men and women throughout this company and other companies to follow your example and to create more jobs in high technology. ■

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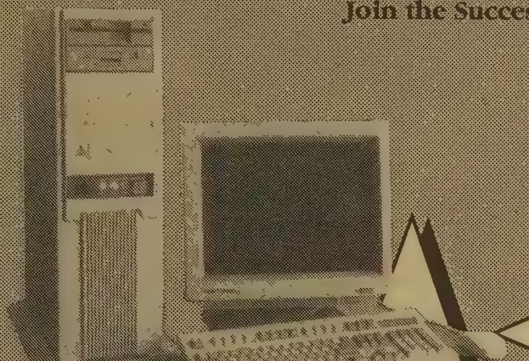

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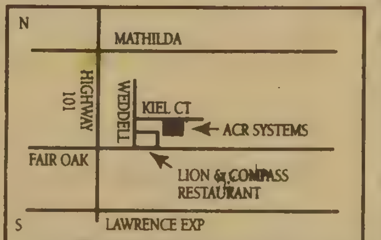

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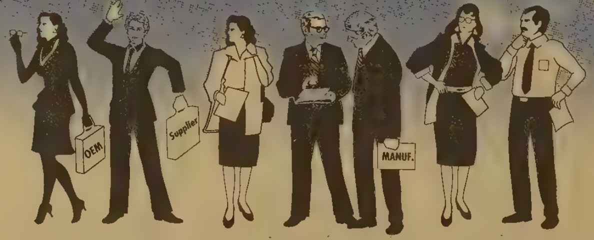

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BUSINESS SOLUTIONS

Sony Portable Multimedia Player

PIX-100 Suggests Interesting Possibilities

BY MITSU HADEISHI

The words "handheld computing" and "multimedia" are rarely used in the same sentence with one another, but the $1000 Sony PIX-100 Multimedia CD-ROM Player has changed all that.

PENS AND PALMTOPS

A compact unit intended for fully portable use, the PIX-100 can also be hooked to a stereo system or headphones; it has NTSC video output for connection to color television sets equipped with a video input jack. At 7 1/8" x 5 7/8" x 2", it is larger than the Sony Data Discman family (see below), but offers far greater functonality than its smaller cousins. Capable of playing full-sized 5 1/4" CD-ROMs, the PIX-100 can display color graphics (when hooked to an external monitor—the built-in screen is greyscale) and play stereo sound, and therefore provides much more presentation pizzazz.

At first glance, the unit seems somewhat unimpressive; if you've encountered one at your local stereo store, you may have been disappointed with the low quality of its video and audio. The built-in speaker produces rather tinny monaural sound; the greyscale display, though sharp and clear, only has a resolution of 320 x 200 (with seven levels of gray), and the images sometimes seem a bit grainy and diffuse.

What is not apparent at first glance is that the sound quality dramatically improves when you use the headphone jack: suddenly the unit is outputting high-quality digital audio, which improves the overall experience considerably. And when viewed on a large-screen television, the graphics, though still somewhat grainy, appear in color (up to 256 colors) and are more readable than on the built-in greyscale display. In addition, the unit doubles as an excellent portable CD player, with a very reliable mechanism.

The PIX-100 also displays the usual high-quality Sony ergonomic design. After playing with the unit for several hours, going through the two bundled Multimedia CD-ROMs (the user manual is included on a CD-ROM as well), I came away much more impressed with the potential, if not yet the current reality, of this technology.

The machine comes with a sample Multimedia CD-ROM (CD-ROMs compatible with this Sony player all bear the MMCD logo, and are all in the CD-ROM XA format), the IBM-produced "Roger Dawson's Secrets of Power Negotiating." Also included is a coupon good for one of three other CD-ROMs: Random House Audio Books Plus' "The Civil War," Compton's NewMedia "Let's Go: 1993 Budget Guide to the USA," or the "Let's Go: 1993 Budget Guide to Europe." In addition, there is a coupon for the first "issue" of the first multimedia newsmagazine: "NEWSWEEK Interactive."

Other discs available now, or scheduled to be released over the next year in the CD-ROM XA (MMCD) format, include a series of business productivity titles. There's also travel information, including Japanese language tutorials; the "At Its Best" series of travel guides; the OAG Air Travel and Hotel Guide; the Herald Tribune "Guide to Business Travel in Europe"; the Zagat-Axxis CityGuide (including detailed maps for most major United States cities, plus full text and more from the Zagat Survey restaurant and hotel guides); the "Wall Street Journal Guides to Business Travel in the USA and Canada"; three of the multimedia versions of the famous "Let's Go" series of travel guides (the European version also includes the Soviet Union and the Baltic States). Business reference works include a work on environmental protection; management guides; real estate, financial, and other desk references; various executive training works; dictionaries, thesauruses, grammar, and style guides; a variety of health reference works; a Berlitz Spanish Language tutorial; Compton's Interactive Encyclopedia; Compton's "Electronic Home Library" (a collection of "classic" works including the text of over 250 volumes of fiction and nonfiction); a movie guide; a cookbook; some historical guides; and miscellaneous other titles.

Some of these titles are not scheduled for release until the end of this year; some of the more intriguing products, for example the Zagat-Axxis city guides and electronic map book, are not slated for release until November. However, quite a few of them are available now, including the Let's Go guides, the Compton's Encyclopedia, the video guidebook, and a number of the business reference guides.

> **What is not apparent at first glance is that the sound quality dramatically improves when you use the headphone jack: suddenly the unit is outputting high-quality digital audio, which improves the overall experience considerably.**

From a technical standpoint, the PIX-100 is fairly simple: It comes with a V20HL, a CMOS 8088-compatible CPU running at 9.55MHz.

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RESOURCES:

Dauphin 5000 Convertible Pentop and DTR-1
Dauphin Technology, Inc.
(708)971-3400

Pen-based applications
Notable Technologies, Inc.
1065 E. Hillsdale Blvd., Ste. 111
Foster City, CA 94404
(415)208-4400

Sony PIX-100 Multimedia CD-ROM Player
Sony Corporation
(201)930-SONY
1-800-222-SONY

TeleScript and MagicCAP
General Magic
(415)965-0400

The system RAM is 1MB; also included is 256K of non-volatile memory (for use by various multimedia applications to store bookmarks and the like), and 512K of system ROM. The machine includes a QWERTY keyboard, a numeric keypad, five function keys (variable according to the application being used), and a four-directional cursor keypad with two control buttons (marked "Yes" and "No"). In practice, you almost never use the QWERTY keypad or numeric keypad; most of the time you're just using the cursor keys and the "Yes"/"No" buttons.

Each CD-ROM is capable of storing up to 600MB of data; this amounts to, of course, up to three hundred thousand pages of text information. Using lower fidelity playback modes, you can get up to sixteen hours of voice-quality digital audio on one multimedia CD, or up to roughly forty thousand full-screen compressed images at 256 colors per image. The CDs are in the CD-ROM XA format, an industry standard spearheaded by Sony, but used by many other manufacturers.

THE POWER OF THE PENCIL

The interactive portion of the included CD-ROM "Power Negotiating" was a bit, well, unimpressive. It covered the material very briefly and fairly superfically. The presentation produces a feeling reminiscent of the way you used to feel during the "audio-visual" presentations in elementary school: narrated slide shows that teachers might use on a lazy afternoon. It has a rushed quality, suggesting that the producers of the CD-ROM were not able to finish the product in time, and just cut out features in order to ship it.

In some regards, opportunities to take advantage of the interactive possibilities were lost. A quiz section consisted of just a number of text files you could scroll through with questions (and the answers at the end) on them; they didn't even bother to try to make the quizzes interactive, for example, by letting you enter your answers, then get a score and a commentary on each question and answer. No, instead, they tell you "get a pencil and paper ready" and write down the answers on a piece of paper.

Pencil and paper? With a $1000 piece of technology sitting in front of me, I don't want to have to drag out a pencil and a piece of paper. Of course, this is not a failing with the entire concept of multimedia, just this particular title.

In addition to this, the presentations used a relatively simple user interface (pushing buttons), and did not really take advantage of the full potential of intelligent random access one could imagine being possible with this machine (other titles, for example those produced by Compton's NewMedia, are reputed to have much better searching and indexing features).

However, in addition to the interactive "multimedia" part of the presentation, there was also the entire collection of the cassette tapes from which this multimedia title was originally derived, and though this was in audio-only format, it comprised something like six hours of audio (by contrast, I was able to quickly get through the entire "multimedia" portion of the CD-ROM title in little more than an hour or so). It's rather remarkable to have an entire cassette collection stored on one CD-ROM.

Despite, and perhaps partially because of, the failings of this particular title, it does whet one's appetite for more. In addition, there is just something remarkable about being able to "play" the user manual for a machine on the machine itself.

In addition, the list of current and future titles for this machine looks potentially interesting; in particular, being able to have the entire Zagat-Axxis database of major US cities on one CD-ROM is impressive. I note the understandable but unfortunate lack of any games for this little unit, however.

Of course, at $1000 this machine is currently a bit pricey; however, this is just the first in what will be a long series of products from Sony and other companies that take advantage of the idea of portable multimedia CD-ROM players.

MORE ABOUT MAGIC

What is General Magic all about? Last month I mentioned that General Magic had announced its TeleScript communications protocol, an interoperable standard that will allow portable communicators produced by many different companies to exchange their information seamlessly. Since then I've learned a bit more about TeleScript.

In addition to the transparent multi-vendor interoperability of the protocol, TeleScript also supports what is called "intelligent messaging," allowing personalized information retrieval. Also, TeleScript supports transmission of graphics, sound, and animation as text. AT&T will provide a TeleScript-based networking system for use by the various vendors that produce portable communicators.

PEN NEWS

•**Notable Technologies, Inc.** has announced a number of pen-based applications, including Pencrush, a $99 data compression utility for pen-based computers; MobileAccess, now in final beta (intended for shipment early this year), a $195 telecommunications and data transfer package that links mobile, portable computers with a number of different host environments via a terminal emulator; Shared Whiteboard, a $99 real-time simultaneous graphical document editor that allows multiple users the ability to create and annotate a document at the same time, with pen strokes and images being transmitted from one unit to the other in real time; and Pencross, a $49.95 pen-based crossword puzzle game. ■

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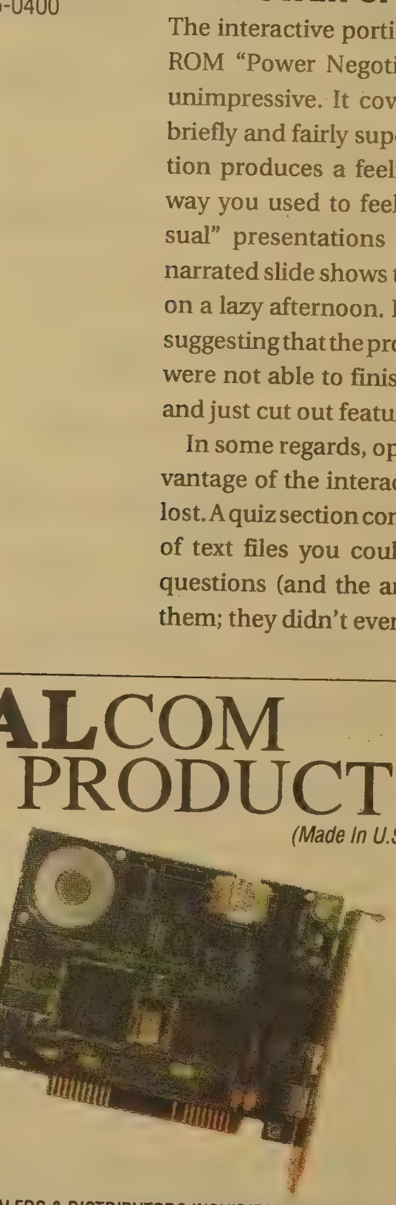

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Windows & Monitors With A Notebook Computer

Windows Is Changing The Features And Peripherals We Want With Our Notebook Computer

BY ED KAHN

RESOURCES:

View Magic-1565C, $699
ETC Computer, Inc.
46711 Fremont Blvd.
Fremont, CA 94538
(510)226-6250

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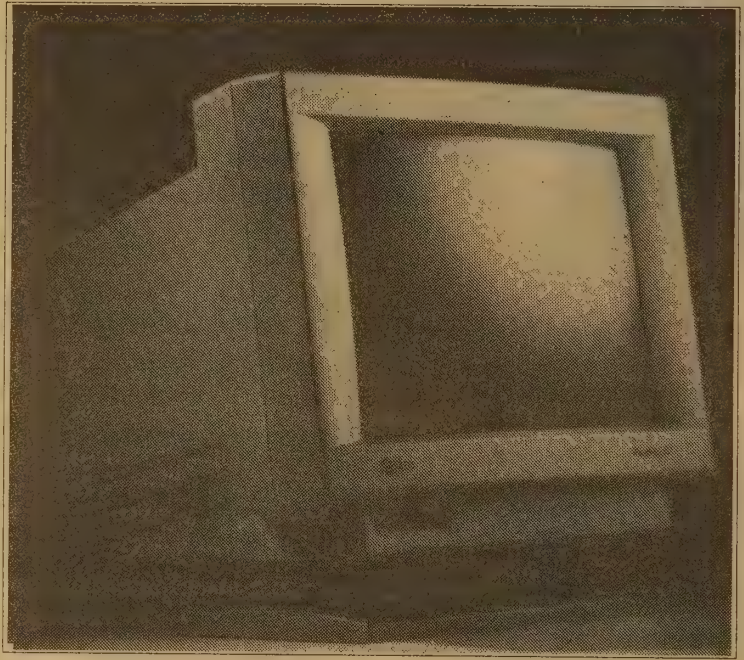
In the past, I regarded one brand of computer as pretty much the same as another so long as it had the features I wanted. My primary concerns were the feel of the keyboard and the look of the display. After that, it was a matter of deciding which additional features I desired and then shopping for the best price. Typically, the choices included: the size of the hard drive, the speed of the computer, and the amount of memory. A final consideration was the strength of the company. You wanted to be sure that the company would be there when you needed service—in or out of warranty.

Most computers come in fairly standard configurations. The almost universal acceptance of Windows has forced me to reevaluate the features I once considered sufficient. In the old days of straight MS-DOS applications, I was generally content with 1MB of memory. Even though I required more for my desktop unit, I regarded a notebook or laptop as a module of my computer system and made compromises in what I wanted from an "On-The-Go" unit. But once I started using Windows, it was not practical to constantly go between Windows and non-Windows applications. For instance, I do not like to run a Windows word processor or spreadsheet on my desktop computer and a non-Windows application on my portable.

Four megabytes of RAM has become part of my minimum configuration, regardless of what others recommend. Also, while speed was not an important consideration for many DOS- based applications, it is much more of a factor when you run a graphical interface like Windows. A slow system—say slower then 25MHz—can be irritating. Thus, Windows has upped the ante for all of us.

The result is that as we need more complex and expensive systems and as portables become more capable, many users find that they can get along just fine with a portable as their only computer. Add a keyboard and color monitor at your primary location and unplug them when you go on the road. You will need a serial port for connecting a mouse and should get a built-in modem to eliminate clutter when you travel. Along with a hard drive of at least 80MB, you should be able to do everything with a single computer.



Unless your primary use of the portable is away from a usual location, I still recommend buying a portable with a monochrome display and getting a larger color monitor for your home base.

I find working with Windows on a monochrome display to be adequate for occasional use, but for day in and day out work, I prefer a good color monitor. While it is possible to buy portables with excellent color displays, it is still quite expensive and has the disadvantage of significantly shortening the length of time you can work on batteries before they need recharging. Unless your primary use of the portable is away from a usual location, I still recommend buying a portable with a monochrome display and getting a larger color monitor for your home base.

In the old days, a 12" monitor was good enough. With Windows and high-resolution graphics, the smallest monitor should be a 15" model. I have been looking for a good monitor to use with a portable and finally found a reasonably priced unit I love. ETC Computer has just released a 15" flat screen model that works perfectly with a portable—or desktop, for that matter. The View Magic CA-1565C has a .28mm dot pitch, which makes for clean and crisp images and offers resolutions up to 1024 x 768. The monitor is non-interlaced.

There are lots of things to like about this monitor. Besides a wonderful display, it is easy to use. Aren't all monitors easy to use? Don't you just plug them in and turn them on? It used to be more that way, but now there are actually a number of adjustments that you will want to make to get your display to fill the screen without distortion. The controls are on the front, which I really appreciate after reaching behind other monitors and then not being able to see the screen without my nose scrunched against the glass. This monitor lets you comfortably adjust every variable.

The front panel offers controls to make eight types of adjustments. These include brightness, contrast, horizontal phase and size, vertical center and size, pincushion and trapezoid adjustments. (These last tow settings are to make sure the right and left borders are both straight and parallel.) To the left of the adjustment controls, there is an LCD readout that displays the settings. The monitor comes with defaults plus two other memories that store your selections. This means you can set up the monitor for several different applications or computers and not have to fiddle with the controls each time you switch.

If you need an inexpensive monitor that does the job, this one is worth searching for. While ETC sells a lot of displays to other manufacturers, they have also begun to develop a network of retailers to offer you this excellent monitor. ■

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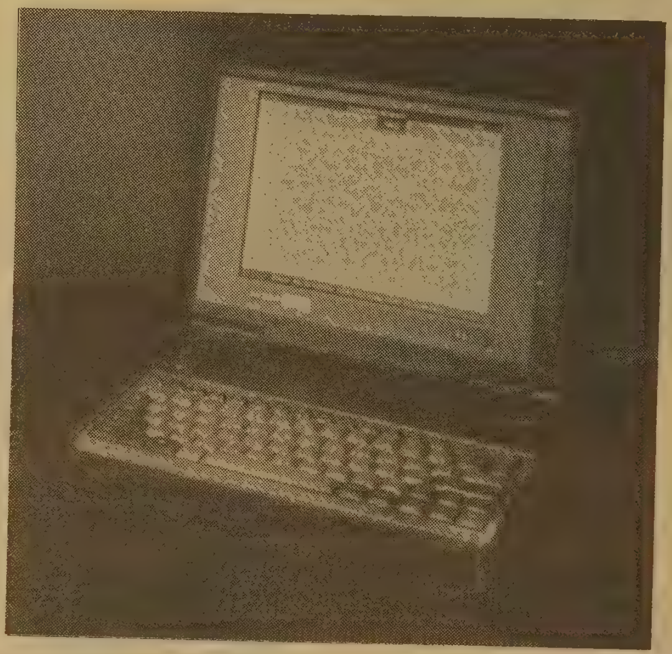
Computer Of The Month

AST PowerExec EL

AST has long been known as a highly innovative computer manufacturer. Its new 5.9 lb. portable again shows why they have earned this reputation. The machine is marked by modularity as well as versatility. The PowerExce EL comes in a several configurations—the entry level model includes 2MB of RAM, upgradable to 20MB, and a 60MB removable hard drive, while various other sizes available. AST has met the competition head-on with a suggested retail price of $1,745 for this basic configuration.

For $2,295 you can get the same machine with 4MB of RAM and a 120MB removable hard drive. This is the model I recommend for anyone who intends to use Windows. In this configuration, PowerExec EL also comes with Windows 3.1 installed and a trackball-like pointing device that fits onto the front of the machine and even looks like it belongs there. I am not crazy about this pointer, but there are both a serial and mouse port on the back that will accommodate a pointing device of your choice.



The PowerExec EL is powered by a 25MHz, 386SL processor and features a crisp 9.5" LCD display providing VGA resolution. If you need color, there are several options. You can connect a VGA monitor through the port on the back of the computer. Consistent with the modularity of this unit, it is also possible to exchange the monochrome LCD for a color display. Both active and passive matrix models are available.

The keyboard on this computer is well designed and offers standalone cursor movement as well as Home, End, PgUp and PgDn keys. The feel of the keyboard is good. Despite the quality of the keyboard, many users might still prefer to use a 101-key keyboard, which can be easily connected.

Modularity is key to the unique design of the PowerExec EL. In addition to the removable hard disk, a PCMCIA slot is provided so you can add a wide variety of accessories, including modems, fax modems, network cards, and SCSI adapters. PCMCIA is the new technology and standard that is really beginning to make an impact. With more and more machines appearing with slots that conform to this new standard, we will increasingly be able to find products that conform to this standard. PCMCIA means that our computers will do more things and last longer before entering obsolescence.

The PowerExec EL includes an AC adapter and NiCd battery pack. Extremely sophisticated power management features make the batteries last up to four hours. You can upgrade to a nickel metal hydride battery ($199) for longer service.

Recognizing that more and more users are choosing a portable computer to fulfill all of their computing needs, AST has introduced the EasyPort ($99), a device that plugs into the back of the EL and replicates its ports. This enables the user to unplug a single device into which all of the peripherals are connected rather than all of the peripherals individually. Many users still feel they need a desktop computer to be able to add boards to their system. AST meets this need with its PowerStation ($449) that offers two 16-bit slots and room for two 5.25" devices. In addition, there is a tape backup included in the unit. The whole thing doubles as a monitor stand.

The documentation that comes with the PowerExec EL is a bit skimpy for my taste, but product support is available through an electronic bulletin board, an 800 number, and a fax service that can provide answers to many commonly asked questions. Should service be necessary, AST provides a one year parts and labor warranty, available in more than 1,200 service centers nationwide.

Users who have shied away from AST because they thought their computers would be out of their price range should take a look at the PowerExec EL. It is terrific. ■

RESOURCES:

PowerExec EL, $1745
AST Research, Inc.
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Irvine, CA 92713-9658
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Experiences Of Effective Telecommuting

The Business Community Has Begun To Acknowledge Telecommuting's Advantages And Disadvantages

BY ROBERT MOSKOWITZ

In the last few years, the world of telecommuting has changed from one in which each company felt compelled to do its own pilot study, to one in which companies are more and more comfortable absorbing what others have learned and going forward from there with a more ambitious telecommuting program of their own.

This is a major development; it marks a departure from the syndrome of having just one or two years of experience with telecommuting—but having them many times over. Instead, the business community is giving credence to the many years of telecommuting experience and acknowledging its long-term advantages and disadvantages.

Here is some accumulated experience drawn from three separate sources that may benefit your own telecommuting development: a telecommuting pilot program, a company's telecommuting application form, and a "personal log" kept by an anonymous telecommuter who successfully made the transition from office-bound work.

(Note: these sources all presuppose that telecommuters will work from home when not at the office. However, there are a growing number of telework centers and shared office sites that allow for telecommuting from a nearby office, rather than from home. Many of the same considerations and experiences apply, regardless of where one does the work.)

FROM A JOINT TELECOMMUTING PROGRAM OF AT&T AND THE STATE OF ARIZONA:

During a six month "test" period in the Phoenix area, the 134 telecommuters in this program stayed away from the office an average of one day per week. The telecommuters tended to call their office about 3.5 times per day, and they received an additional 2.5 calls from coworkers at the office. About 88% used some of their telecommuting time to do writing, editing, and other typing. About 85% used some of their telecommuting time to do reading, researching, and planning. More than half did word processing while telecommuting, and almost as many accomplished useful work using nothing more than an ordinary telephone.

About 60% of the telecommuters in this study noticed a marked improvement in their attitude toward their job during the telecommuting test period. Nearly 80% said telecommuting helped them manage their time better, allowed them to work more often at the times of their "peak" capabilities, and favorably impacted how well they met work objectives. More than 90% said they would recommend telecommuting to others, that they faced fewer distractions at home, and that they were able to successfully keep a separation between their work and home responsibilities. After the test period, 97% elected to continue telecommuting the same amount of time or more frequently.

More than three-quarters of these telecommuters' supervisors reported that productivity went up, morale went up, and their areas of responsibility benefited from the telecommuting program, all without any increase in their supervisorial work load.

During the test period, the telecommuters avoided driving approx. 97,000 miles, and thus avoided generating nearly two tons of air pollutants. They also saved more than $10,000 they would normally have spent on commuting costs, and escaped from about 3,600 hours of travel time. It should be noted that the 134 telecommuters in this test program had a mean time of about 35 minutes for commuting one way to or from work. Their average commute was about 15.5 miles, one way.

These numbers are representative of many other pilot studies, and can give you a reasonable basis on which to compute how much you—or employees of your company—would save and benefit by practicing telecommuting just one day a week.

FROM A GTE TELECOMMUTING APPLICATION FORM FOR EMPLOYEES:

In addition to name, position, and other information to locate and identify the employee within the vast GTE organization, the questionnaire asks for such important information as:

- What appeals to you about telecommuting? What do you expect to gain, and how do you think telecommuting can help you?
- What concerns do you have about telecommuting? What parts of your job might be hard to perform from another location? What are the potential "problems" from telecommuting?
- How do you think telecommuting might help you do your job more efficiently?
- If you have young children or other dependents at home, what arrangements have been made for their care during your working hours?
- How well do you think you'll be able to manage the potential distractions while working away from your normal/routine work location?

The GTE application form also asks each applicant to rate his or her own work (high, medium, or low) for various aspects of its suitability to the demands of telecommuting, as follows:

- "Portability" of the job; can you take what you need in a box or access it over the telephone line?
- Tasks or work materials can be taken out of the office without violating data security policies?
- Amount of contacts with others that can be done by phone, voice mail, fax, e-mail, or mail (as opposed to in-person)?
- Ability to "clump" required face-to-face interactions into scheduled times?
- Job tasks have fairly well defined beginning and end points, for easier measurement?
- Amount of concentration required over long periods of time to do the job well?

The GTE application form then asks each applicant to rate themselves (high, medium, or low) for various personal characteristics suitable to the demands of telecommuting, as follows:

- Ability to work without direct supervision?
- Quality of work planning and organization skills?
- Ability to work without frequent, direct

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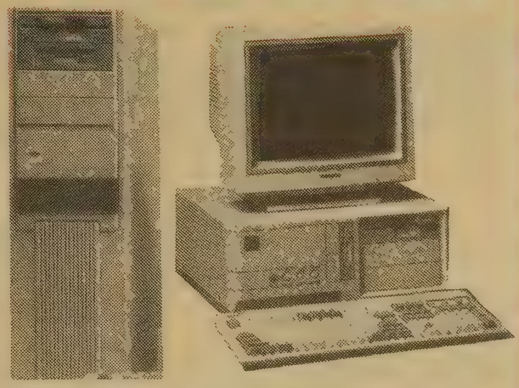

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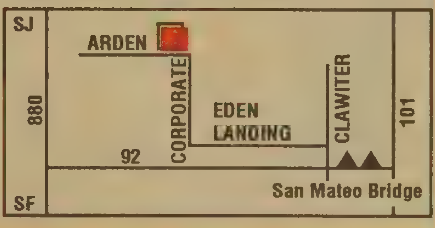

performance feedback?

- Ability to solve own problems, or at least make first attempt at solving them?
- Reliability re: work hours and attendance?
- Ability to work productively and gain satisfaction without frequent social contact with coworkers?

The GTE application form asks each applicant's supervisor to rate themselves (high, medium, or low) for various personal characteristics suitable to the demands of managing a telecommuting subordinate, as follows:

- Supportive attitude towards telecommuting?
- Ability to supervise without direct daily contact?
- Ability to provide clear direction and set performance goals?
- Willingness to manage according to work products or results, [rather than] by relying on observations of activity?

The GTE application form also asks each supervisor to rate the applicant's work (high, medium, or low) for various aspects of its suitability to the demands of telecommuting, as follows:

- How many days per month *can* this job be done away from the office?
- How many days per month *should* this job be done away from the office? At home? _____ At a GTE satellite location? _____ At another location? _____
- What equipment and resources does the employee need for telecommuting—and which of these are currently available? PC or terminal? Printer? Modem? Extra phone line(s)? Fax machine? Software? Other?

This form reflects the main concerns that must be addressed in selecting telecommuters with a high likelihood of success. By screening applicants carefully and selecting those that meet basic telecommuting criteria, it's far easier to avoid the problems, disgruntlement, and disruption of work flow that can arise from a poorly planned telecommuting program.

FROM A PERSONAL LOG KEPT BY AN ANONYMOUS TELECOMMUTER IN NORTHERN CALIFORNIA:

"It took me a long time to learn how to use my modem and printer. I was not familiar with their operation, and I didn't have enough electrical outlets for all the computing equipment I brought home from the office. Later on, I learned the modem was faulty and had to be replaced. Next time, I'll learn in the office how to work all the equipment, then it will be easier to start using it at home.

"One fear I encountered was that at one location or the other I wouldn't have the materials and resources I needed to work. This initially led me to lug boxes and briefcases back and forth between work and home. Eventually, I eliminated much of this lugging through duplication of key paperwork and better separation of my tasks and responsibilities. But even today I occasionally go to my car trunk for certain files.

"Another fear is that I'll miss something going on at the office. At first, I received duplicate memos from various people who were concerned that I might be left out of the loop. When the duplicate memos stopped arriving, I wondered if I was missing anything. Over a long period, however, I learned that I don't miss anything of importance in the office. I catch a sign of it somewhere and can then find out what I need to know. But I sometimes wish for a phone call, with all its human inter-

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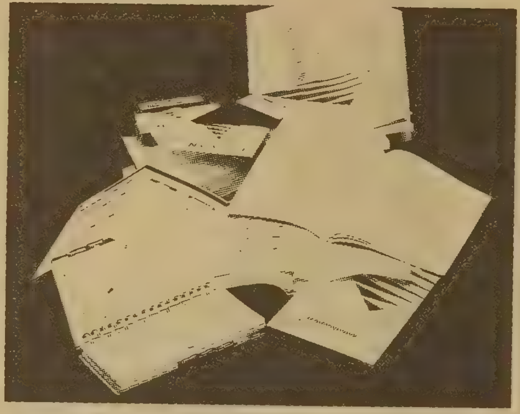

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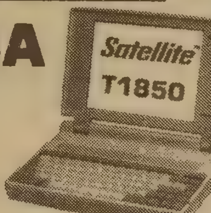

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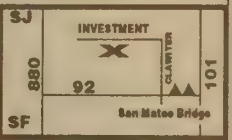

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"My biggest fear was that I'd miss an important phone call from work. I was afraid every time I stepped outside to look at my garden or to drive my daughter to a dentist appointment—even when I went to the bathroom. I felt someone might need me, and also that someone might think I was stepping out on company time. I felt that to justify the trust placed in me I had to stay within reach of the telephone. Some of this tension has disappeared, but I'm far more comfortable now that I have firmly established hours when I'm "on" and when I'm "off." Also, I'm less tied down because I have a cordless telephone and a message machine for the occasional calls I miss.

"Another problem developed when I began putting in twelve- and fourteen-hour days at home. I enjoyed being able to continue working on a task or a project well past the time I would normally have to quit to begin my commute toward home. But then I realized I was snapping at my children when they asked if I was going to help prepare dinner. Some nights I would work late after dinner and next morning have trouble getting to the office by 8:00 am. If I did show up late at the office, I feared that others would think I was getting special treatment because of my telecommuting arrangement. After months of this, I began setting my own limits on my hours of work at home, and keeping deadlines from the office in better perspective with the legitimate demands of my home life.

"An interesting situation arose back at the office, too. I had agreed that others could use my office while I was telecommuting. But then I felt a little dismayed and disoriented when I would come in and find others meeting in my office, or other people's paperwork piles on my desk. As my schedule firmed up, this happened less and less often. But even now, when I show up unscheduled at the office I sometimes have to work in the conference room instead of at my own desk."

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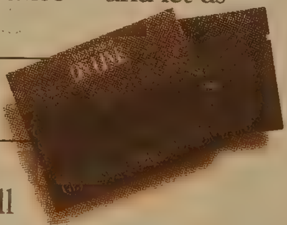

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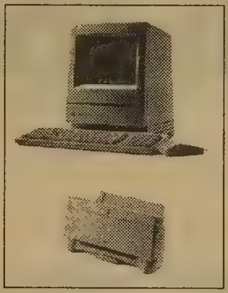

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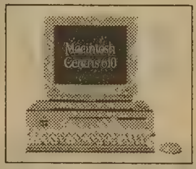

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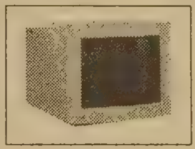

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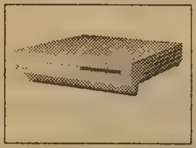

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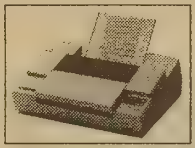

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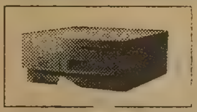

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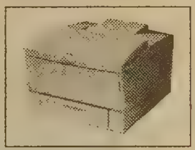

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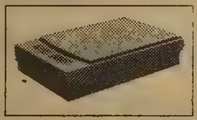

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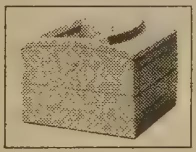

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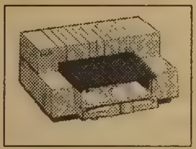

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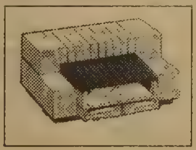

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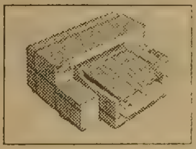

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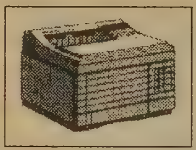

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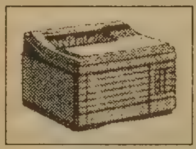

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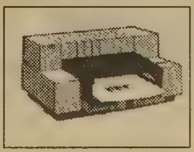

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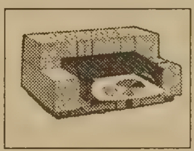

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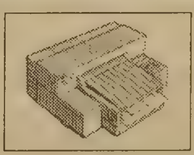

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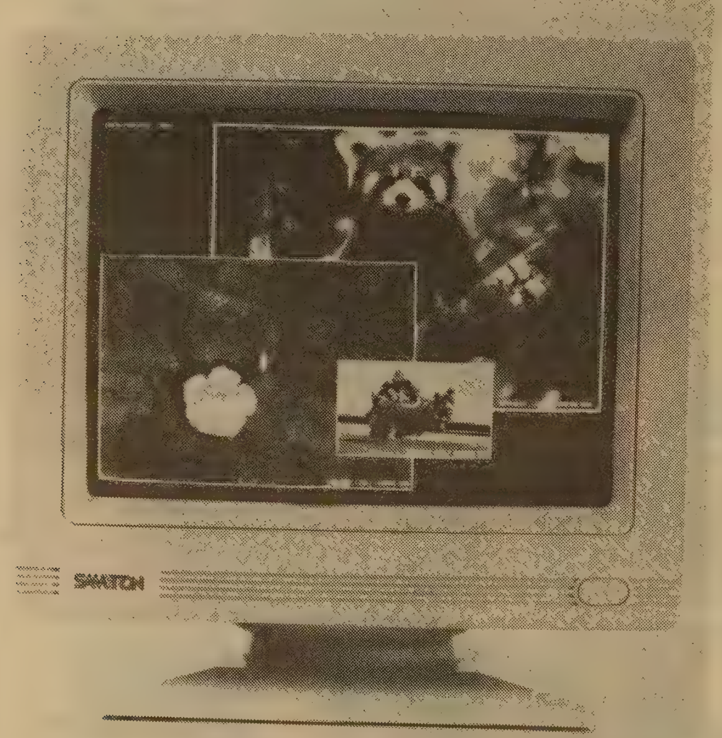
Making A Notebook Ergonomic

Some Issues & Approaches For Healthier Computing

BY ANNA COUEY

When notebook computers became widely available and affordable I was really excited—for years I'd dreamed of on the road (or mountain-top) computing! So I got one, and happily carried it with me almost everywhere I went. I couldn't understand why one would want a desktop computer anymore.



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Anna Couey (couey@well.sf.ca.us) is a writer and artist; and she is network coordinator for Arts Wire, an arts news and advocacy computer networking project. She specializes in cultural applications of new communications technologies.

A few months after using my notebook extensively as my sole computer, I developed carpal tunnel syndrome and experienced severe back/neck problems. As my chiropractor gave me ultrasound for the carpal tunnel and cracked my back, she warned me that notebook computers *should not* be used as one's sole computer. The main problem with most notebooks, as opposed to desk-tops, is that the screen is attached to the keyboard, which keeps the display relatively close and forces you to look down—a posture that is damaging for your upper back and neck.

The best posture, at least in current thinking, is that you sit at a computer with your back straight (though not rigid), your shoulders relaxed, your arms bent at ninety degrees, your wrists and hands flat as you type. Your feet should be flat on the floor. And your monitor is supposed to be eye level.

> ***As my chiropractor gave me ultrasound for the carpal tunnel and cracked my back, she warned me that notebook computers should not be used as one's sole computer. The main problem with most notebooks, as opposed to desk-tops, is that the screen is attached to the keyboard, which keeps the display relatively close and forces you to look down—a posture that is damaging for your upper back and neck.***

Some ergonomic problems can be taken care of inexpensively. Chairs that allow you to adjust the seat height and back support are extremely helpful (phone books can also serve to raise your seat in a pinch). You can purchase a wrist rest that helps you keep your wrists flat as you type. If your notebook has an especially high keyboard—many of them are higher than desk-top keyboards—you can purchase a Silicon Sports' Notebook Pad, which includes a 1.5" pad attached to a foam-encased flat metal support that gives your computer a stable, flat surface when you are away from a desk. You can also roll up a towel to the proper level, but I found that approach wasn't as effective for me.

No matter how ergonomic your set up is, a few minutes of stretches and exercises every two hours are strongly recommended. (Disappointing as it may be, our bodies just haven't evolved to where sitting at a computer all day is healthy for them.) However, the only solution for monitor height and distance was to get an external monitor.

MONITOR DESIGN

If you want to be ergonomic, you should consider the external design of the monitor. Are its adjustments on the front, the side, or the back? It's best for *your* back if you don't have to bend yourself around the screen to turn it on. In fact, the monitor I used for this article, a Samtron SC-428TX, has all adjustments and the power button in front.

As with chairs, it's useful for monitors to be as configurable as possible, physically speaking. Swivel capability is a plus. The SC-428TX can swivel up, down and sideways.

MONITOR ELEVATION

Even tilted as far up as it possibly can go, a monitor sitting on your desk behind the notebook is going to be nowhere near the height you need. It needs to be raised. Thinking one would be just what I needed, I checked into monitor arms. The ones that I saw, ranging from $40 to $90, all shared the same limitation—their maximum height was 8"—still too short for eye level. The solution? For me it was three pine boards, nailed to form an 11" stand.

EYE IRRITATION

One of the things I like most about my notebook (after its portability), is the LCD screen. Even if it's awful in sunlight, in an office I can stare at it for eight hours straight, and still walk away feeling like a sentient human being. Luckily, I found that I could do the same thing with the SC-428TX.

Aside from the tendency all of us have to not blink when working on a VDT, the factors

continued on page 284

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BY JOHN WOLCOTT

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THE SUN SYSTEM

A Sun computer system is built around a large, UNIX-based file server; good for a networked environment taxed by heavy CPU processing. Sun Microsystems continually upgrades its systems features. In December 1992, for instance, Sun released the Solaris 2.0 operating system, and many companies are shifting to this environment. Actually, this upgrade is a requisite to adding new Sun workstations to an existing system or running the newer Sun-based applications.

With over a half million users, Sun workstations are commonly used for engineering, large accounting databases, computer-aided design, military applications, and medical applications such as Magnetic Resonance Imaging. The list of major corporations using a Sun is equally impressive—they include Xerox, Hughes Aircraft, Pacific Bell, Pacific Telesis, Rockwell International, McDonnell Douglas, and UNOCAL. Sun training for the end-user is most often recognized as a necessity, and companies usually make the arrangements to provide their employees with training.

Sun Microsystems Computer Corp. has long offered training for users of their high-end business application systems. With regular revisions occurring in Sun systems and applications, study material is continually being upgraded to meet these needs. Effective system administration requires gaining Sun productivity skills and being trained on revisions as they evolve.

Karin Kohn, a system administrator for Pacific Bell, has worked extensively with database applications. When her job shifted to being a Sun system administrator, Pacific Bell arranged for the training. The choice of a Sun training facility, as with most Sun trainees, was dictated by course scheduling availability. She recently completed a five-day System Administration course at New Horizons Computer Learning Center in Santa Ana, California. Karin feels confident in her ability to administrate the Sun System.

SUN TRAINING COURSES

All courseware for Sun-certified training is developed entirely by Sun Microsystems with upgrade input from various Sun training facilities. Because a Sun system is not "self-taught," formal instruction is necessary to become anything more than a casual application user. Sun training features a "computer lab environment" with students learning "hands-on" at a Sun workstation in the classroom.

> **Administration of a Sun system is not something you can really do very well without formal training. Plus, what about training for existing and new employees?**
>
> **• Who ya gonna call?**

Before attending, it is a good idea to know the basics of using a Sun workstation. If you've previously dabbled in a UNIX environment, it's definitely an advantage. Sun training courses are tailored to four different categories of Sun users. The curriculum for Sun training addresses operation for the end-users, programmers, system administrators, and hardware maintenance technicians.

These categories, termed "Learning Paths," involve a series of courses directed toward having students obtain a complete set of Sun System skills necessary to operate productively in a professional environment. If you're new to the Sun environment, start your training with end-user courses before moving on to any system administration duties. A full year of end-user experience is recommended before taking on system administration.

CHOOSING A LEARNING PATH

Learning Path selection is fairly straightfor-

Continued on page 285

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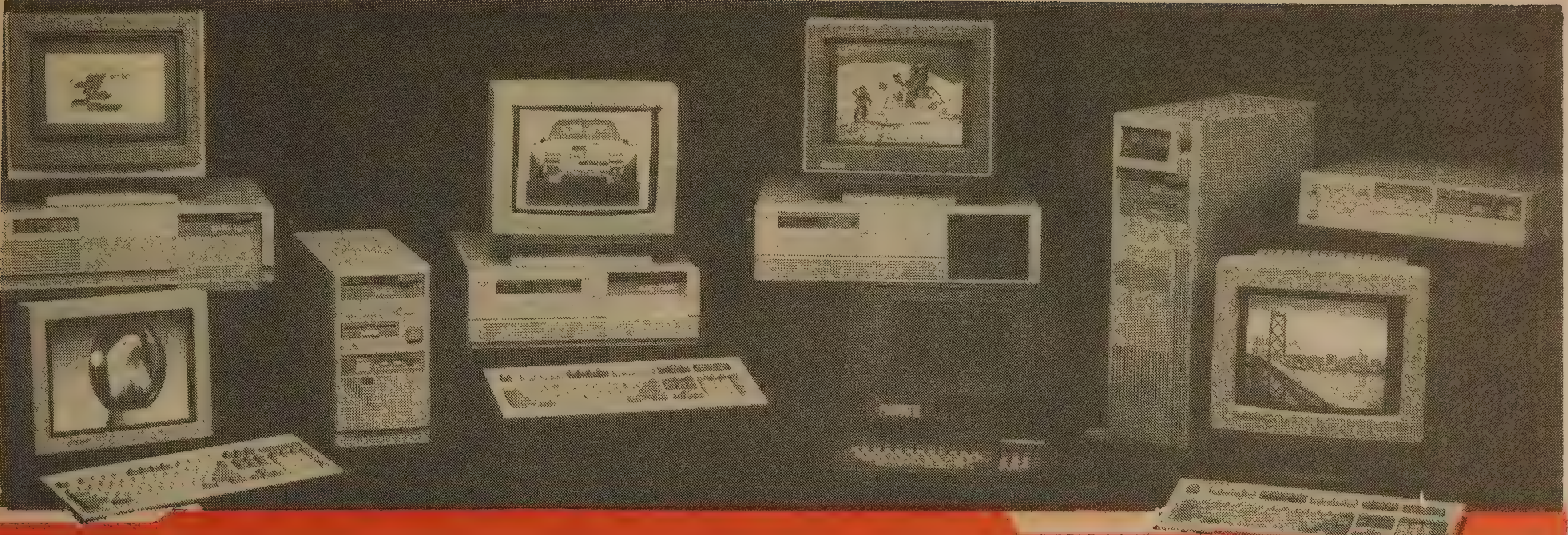
John Wolcott is a free-lance writer for hardware and software documentation.



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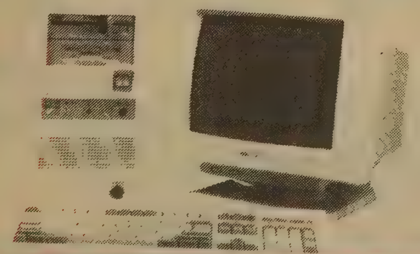

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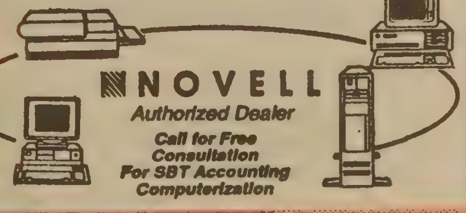

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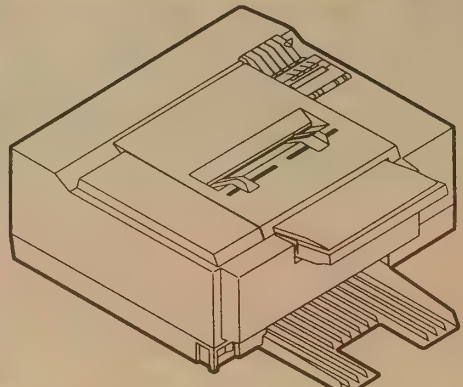

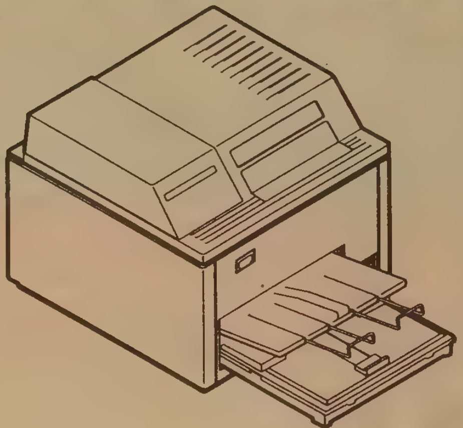

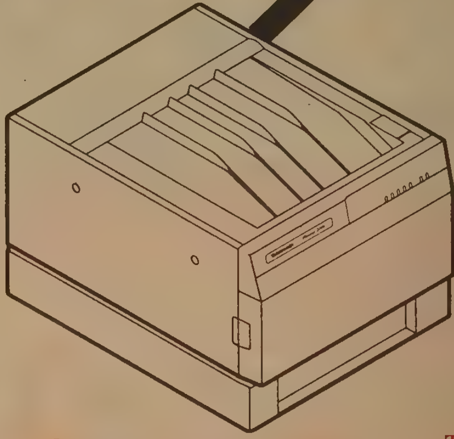

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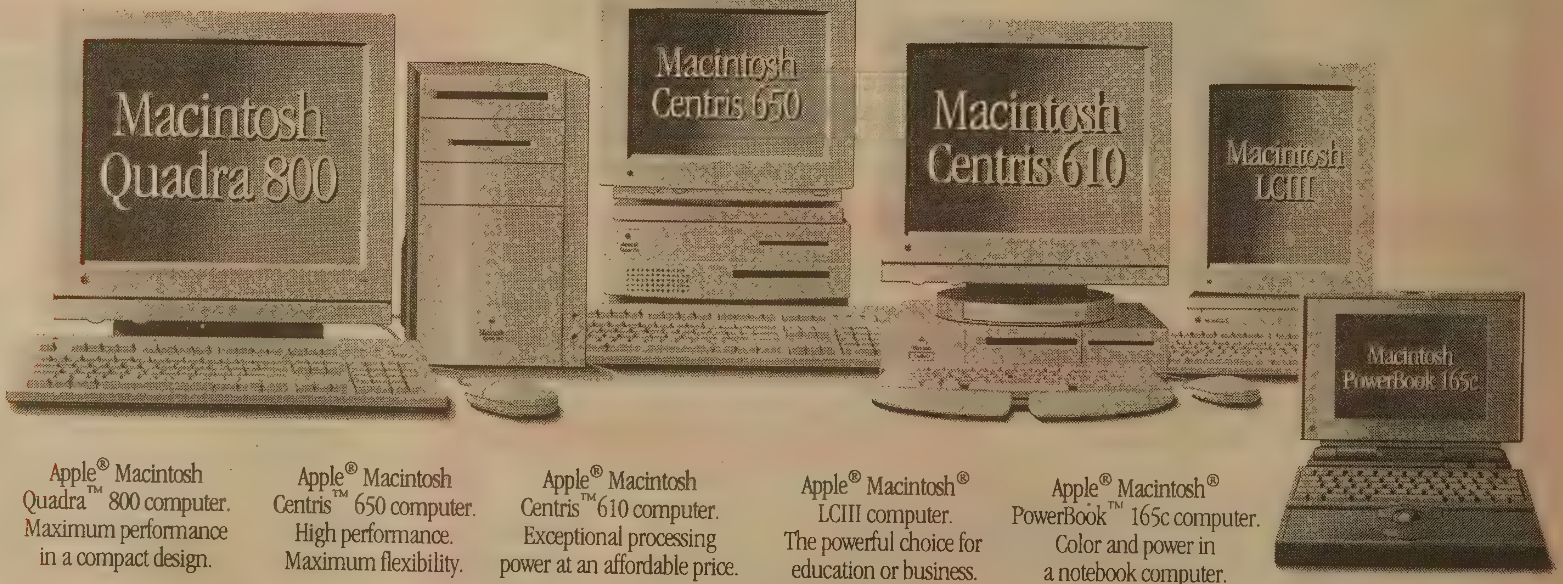

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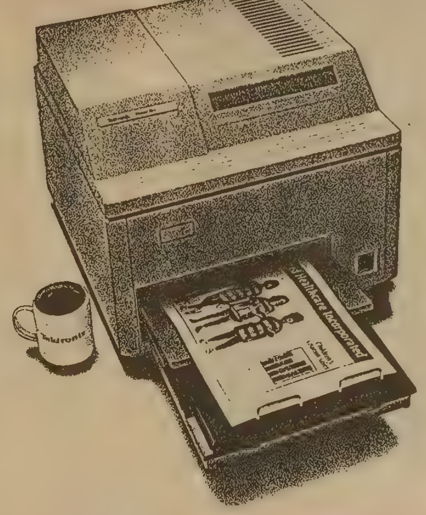

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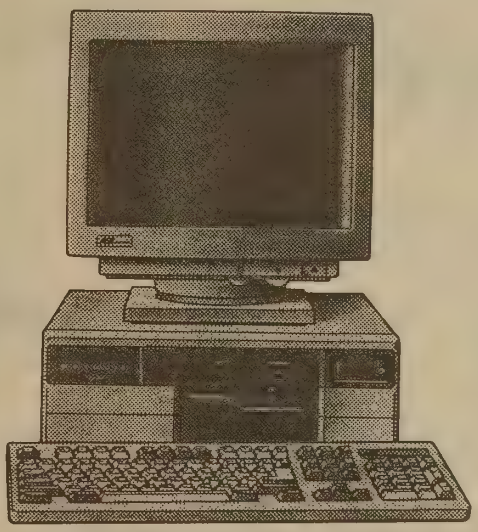

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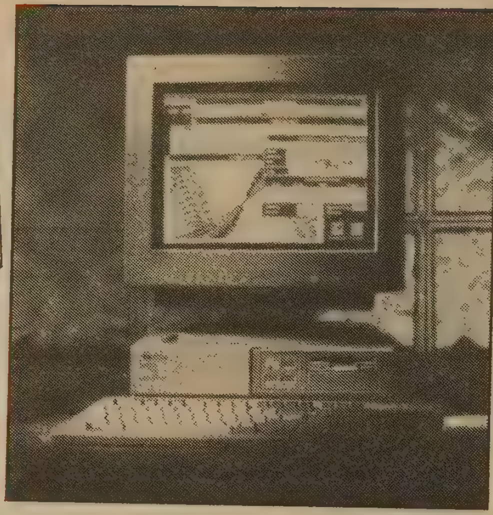

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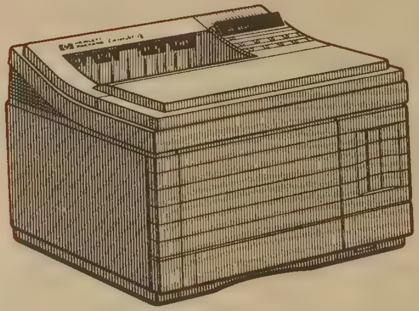

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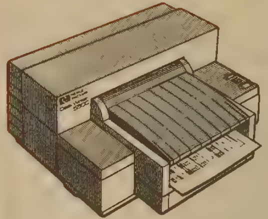

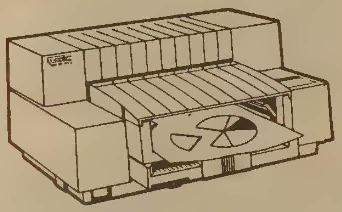

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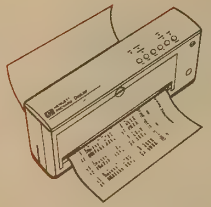

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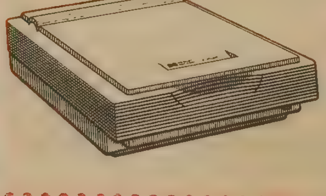

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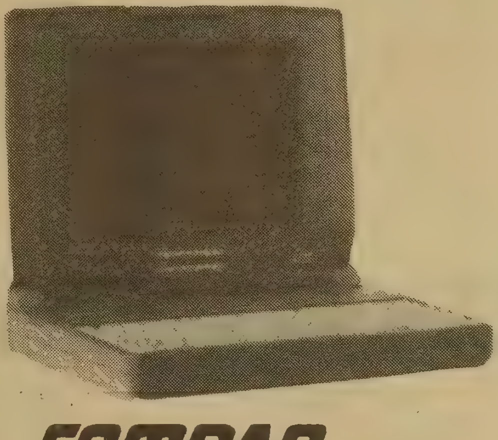

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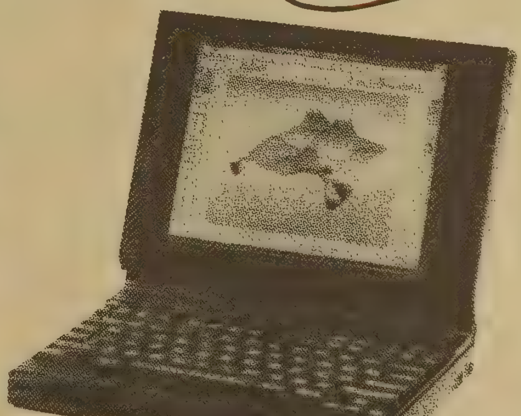

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Windows For Workgroups 3.1

Dawn Of Mass-Market Networking

BY YACCO

It's been quite a while since I've covered peer-to-peer networks here, and a lot has happened in the meantime.

Aside from all of the updates to products like Artisoft's Lantastic—including new Windows versions for many—that have appeared during the interim, both Novell and Microsoft now have entries in the category. These new products target much the same market as earlier peer-to-peer products; they offer easy installation, simple administration, and low cost.

LOCAL AREA NETWORKS

However, there are one or two important differences between early players like Lantastic and the newcomers. Foremost among these differences is that Windows for Workgroups and Netware Lite come from industry giants that can afford to buy market share at almost any cost. Some of that share may come from Artisoft, but Netware Lite and Windows for Workgroups are also likely to bring networking to many new users. Both are being sold not only through conventional network channels such as consultants and value-added resellers, but through superstores and other retail outlets that lack conventional access to networking expertise. They do this by offering a simple system design packaged in ready-to-use bundles.

The appeal of WFW is that it provides resource sharing through already familiar Windows components and a few extensions.

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NETWORKS FOR NOVICES

Lantastic and its ilk are already very friendly to the user. However, the approach of Microsoft and of Netware Lite vendors, such as Xircom and Ansel, is to put together a package that includes the expertise along with all of the cable, connectors, terminators, adapters, and software required to set up the network. Windows for Workgroups 3.1, for example, is available in several packages that suit a variety of user profiles. In its most complete incarnation, the Starter Kit, the product packages its expertise into a video that shows you how to open your machine and install an adapter.

WFW's installation video is fairly easy to follow, except for its caveat not to use a 32-bit slot for the network cards, which neophytes are unlikely to find meaningful. It would probably be much more helpful to just enjoin using slots longer than the card's connector. Also, an inexperienced user might be concerned about a card sticking out beyond the connector, so the video should address that concern in plain English.

Except for these relatively small problems, the video looks like it would be effective in alleviating some of the trepidation most people feel the first time they touch the inside of their hardware.

Beyond the hardware, software installation has been simplified to the point that WFW knows how to detect and automatically set itself for more than 150 adapters. For those times when IRQs must be set, the setup program detects free values. WFW product manager Russell Siegelman claims that setup performs these tasks successfully more than 90% of the time. Naturally, if you're using the adapter in the Microsoft Starter Kit, the success rate jumps to 100%. And while you can perform a custom installation, the Express setup option offers enough default options to satisfy the demands of the typical novice user.

The adapter itself, the software, and everything else you need to link two machines is provided—including a copy of Windows 3.1 and a small screwdriver. An abbreviated user's manual is included to cover the basics of Windows and the proprietary peer-to-peer network operating system. For the rest you must rely on the online help system. (Presumably, an office planning to use WFW is already using Windows.) Manuals are included for the major components that WFW adds to Windows: electronic mail and group scheduling, the main features that support workgroup computing. WFW also extends dynamic data exchange (DDE) across a network—including live links to remote documents—and it provides access to the data on other network servers including Novell Netware and Microsoft's LAN Manager.

Windows for Workgroup's additions provide the infrastructure required to support disk-file and printer sharing, to send and receive electronic mail, and to plan and schedule meetings. Furthermore, software that takes advantage of this infrastructure can be written to process group documents concurrently.

The appeal of WFW is that it provides resource sharing through already familiar Windows components and a few extensions. For instance, printer sharing is provided through Print Manager, file sharing through extensions to the File Manager. Data can be shared through a version of the Windows Clipboard called the Local ClipBook via WFW's ClipBook Viewer. Network settings—changing the name of the computer or workgroup, adapter configuration, passwords, etc—are made via extensions to the Control Panel. You can fine-tune system performance with a Performance Priority slider that divides your CPU between local and remote tasks. In addition, there are several simple network management tools: WinMeter, a graphical monitor of PC utilization by local and remote applications; Net Watcher, a monitor and manager of connected users and the resources they access; and Chat, a full-duplex interactive messag-

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	Friday	2nd	IBM LAN Server 3.0 *Day 3*	
	Saturday	**3rd**	***No Classes***	
	Sunday	**4th**	***No Classes***	
	Monday – Saturday	5th — 10th	**CNE Week** Multiple Classes	*Please Call for Classes Scheduled*
	Sunday	**11th**	***No Classes***	
	Monday – Saturday	12th — 17th	**CNE Week** Multiple Classes	*Please Call for Classes Scheduled*
	Sunday	**18th**	***No Classes***	
	Monday	19th	OS/2 2.0 Advanced *Day 1*	
	Tuesday	20th	OS/2 2.0 Advanced *Day 2*	
	Wednesday	21st	IBM LAN Server 3.0 *Day 1*	
	Thursday	22nd	IBM LAN Server 3.0 *Day 2*	
	Friday	23rd	IBM LAN Server 3.0 *Day 3*	
	Saturday	**24th**	***No Classes***	
	Sunday	**25th**	***No Classes***	
	Monday – Friday	26th — 30th	**CNE Week** Multiple Classes	*Please Call for Classes Scheduled*
May	**Saturday**	**1st**	**CNE Week** Multiple Classes	*Please Call for Classes Scheduled*
	Sunday	**2nd**	***No Classes***	
	Monday	3rd	Introduction to UNIX System V	[Beginner] *Day 1*
	Tuesday	4th	UNIX System V Administration	[Intermediate/Advanced] *Day 2*
	Wednesday	5th	UNIX System V Administration	[Intermediate/Advanced] *Day 3*
	Thursday	6th	LAN Workplace – TCP/IP	
	Friday	7th	NFS – Server	
	Saturday	**8th**	***No Classes***	
	Sunday	**9th**	***No Classes***	
	Monday – Saturday	10th — 15th	**CNE Week** Multiple Classes	*Please Call for Classes Scheduled*
	Sunday	**16th**	***No Classes***	
	Monday – Saturday	17th — 22nd	**CNE Week** Multiple Classes	*Please Call for Classes Scheduled*
	Sunday	**23rd**	***No Classes***	
	Monday	24th	OS/2 2.0 Advanced *Day 1*	
	Tuesday	25th	OS/2 2.0 Advanced *Day 2*	
	Wednesday	26th	IBM LAN Server 3.0 *Day 1*	
	Thursday	27th	IBM LAN Server 3.0 *Day 2*	
	Friday	28th	IBM LAN Server 3.0 *Day 3*	
	Saturday	**29th**	***No Classes***	
	Sunday	**30th**	***No Classes***	
	Monday	31st	**CNE Week** Multiple Classes	*Please Call for Classes Scheduled*
June	Tuesday – Saturday	1st — 5th	**CNE Week** Multiple Classes	*Please Call for Classes Scheduled*
	Sunday	**6th**	***No Classes***	
	Monday	7th	Introduction to UNIX System V	[Beginner] *Day 1*
	Tuesday	8th	UNIX System V Administration	[Intermediate/Advanced] *Day 2*
	Wednesday	9th	UNIX System V Administration	[Intermediate/Advanced] *Day 3*
	Thursday	10th	LAN Workplace – TCP/IP	
	Friday	11th	NFS – Server	
	Saturday	**12th**	***No Classes***	
	Sunday	**13th**	***No Classes***	
	Monday – Saturday	14th — 19th	**CNE Week** Multiple Classes	*Please Call for Classes Scheduled*
	Sunday	**20th**	***No Classes***	
	Monday – Saturday	21st — 26th	**CNE Week** Multiple Classes	*Please Call for Classes Scheduled*
	Sunday	**27th**	***No Classes***	
	Monday	28th	OS/2 2.0 Advanced *Day 1*	
	Tuesday	29th	OS/2 2.0 Advanced *Day 2*	
	Wednesday	30th	IBM LAN Server 3.0 *Day 1*	

EVENING CLASSES
6:30 p.m. – 10:00 p.m. *[call for class schedule]*

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ing system.

The Windows for Workgroups mail system is a subset of the Microsoft Mail 3.0 client and server. It is rather limited, and WFW, alone, is best suited for small workgroups on simple networks. Fortunately, its limits can be upgraded with the Microsoft Mail and Schedule+ Extensions to Windows for Workgroups if it's necessary to send mail between Workgroup postoffices.

The Extensions also let you take advantage of both Microsoft and third-party connectivity such as PROFS, All-In-One, cc:Mail, WordPerfect Office, MCI Mail, and others. So, WFW can be used to add peer-to-peer capabilities, and even simultaneous access to multiple networks, to workgroups attached to large sophisticated networks.

Schedule+ provides much the same utility as the daily planners published by Franklin, DayTimer, and others. You can schedule meetings; plan appointments, recurring appointments or tentative appointments; and create prioritized task lists. And you can make changes to your calendar off-line, say on a home computer or portable, and Schedule+ automatically merges the changes to the copy of your schedule on your postoffice.

OPTIONS

In addition to the Starter Kit, Windows for Workgroups 3.1 is available in configurations for single nodes, including versions that omit the hardware or Microsoft Windows 3.1. There's a version that upgrades Windows 3.0. It's even possible to connect DOS nodes to WFW, although they can only connect to printers, share files, and access electronic mail. (Scheduling requires Windows.) You can preserve just about any investment in hardware and/or software. At present, WFW hardware is only available for thin Ethernet. However, WFW also supports the Ethernet, Arcnet, and Token Ring adapters of other vendors.

Other than a compatible adapter, Windows for Workgroups has essentially the same hardware needs as Windows 3.1. The minimum configuration includes a '286 processor, 2MB of RAM, one high-density floppy drive, and a hard disk with at least 9.5MB of disk storage (14.5 MB recommended). You also need DOS version 3.3 or higher (versions 5.0 and up are recommended). However, you need at least a '386 and 3MB of RAM for file and printer sharing. The minimum configuration only provides mail, scheduling, and network DDE. Furthermore, as with vanilla Windows, the more memory and disk space you give this GUI, the better the performance it provides.

HELP!

Incidentally, if you prefer printed help to Microsoft's online variety, consider books on WFW. *Windows for Workgroups Made Easy,* by Tom with Jim Sheldon, is a good choice for users needing extensive help with Windows as well as WFW. *Networking Windows for Workgroups,* by Martin Matthews and Bruce Dobson, concentrates more on WFW and less on Windows. Both Osborne McGraw-Hill books provide examples, as well as advice that will help you set up and use WFW. ■

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Ins And Outs

The Culture Of Secrets And Standards In Windows And UNIX

BY BENNETT FALK

UNIX

Copyright © 1993 by Bennett Falk. All rights reserved. Bennett Falk lives in the Bay Area, writes when he can, and hopes for the best. He works for Sybase, but the opinions and attitudes expressed are his own.

Two pieces of mail arrived one day last week, one from Yggdrasil Computing, one from Microsoft.

Microsoft was trying to sell upgrades to Visual C++; Yggdrasil was promoting its Linux/GNU/X package, a complete UNIX-like system for 386/486 computers, including source code and an X Windows user interface.

DIVERSION INTO "UNDOCUMENTED WINDOWS"

However different the two companies might be, both their letters suggested that I would be a happier person if I had a CD-ROM for their software. Looking at the wobbly stacks of diskettes all around my workroom, I was inclined to agree; it seemed that some research was in order.

CD-ROM technology is a hot item in the current literature, so it did not take long to find an article by Jim Harper about using SCSI CD-ROM devices under DOS ("A DOS Redirector for SCSI CD-ROM" in the March 1993 issue of Dr. Dobb's Journal). The article was informative enough, but I was quickly led from CD-ROMs by the article's repeated references to *Undocumented DOS*, by Andrew Schulman, David Maxey, and Matt Pietrek (Addison-Wesley, 1990). The references made the book look interesting, so I set off to Cody's Bookstore to find out what I could.

The ancient computer terminal at Cody's disavowed any knowledge of *Undocumented DOS*. It did, however, report that there were two titles in stock beginning with the word "undocumented": a poetry collection named *Undocumented Love*, and *Undocumented Windows*, also by Schulman, et al. It was a simple matter to reckon that undocumented Windows, no matter how big the book, would take less time than undocumented love.

With titles like *Windows for Dummies* and *Windows for Mere Mortals* making frequent appearances, it is a safe bet that cynicism is firmly entrenched in the book market for Windows. Still, a quick scan through *Undocumented Windows* showed it to be a fine book and no less worthy of attention than its DOS counterpart. The authors are knowledgeable and write well, even if their attitude toward the "undocumented" occasionally veers dangerously close to obsession.

Undocumented Windows is a surprisingly stimulating book to read. In addition to describing some aspects of the Windows API that are not covered in the official documentation, the book includes an elaborate discussion of the tools and techniques the authors used to find and interpret undocumented features and behavior. The tools may be unique to Windows, but the techniques (reverse engineering, a certain amount of disassembly, and just plain "snooping") are a matter of general interest to anyone who takes software seriously.

After reading a few pages, it was not difficult to imagine new ways to use Windows. It might, for example, be possible to make Windows behave more like the MIT X Windows system so popular in the UNIX world. I bought the book and was shortly engaged in a flurry of activity, moving from *Undocumented Windows* to the Windows documentation to the keyboard and back again. The whole enterprise of using Windows had somehow become much more interesting.

WINDOWS VS. UNIX: CULTURAL CONFLICT

Now this is a curious thing. Why should a discussion of the undocumented features of any piece of software turn out to be a better stimulus to actually using the software than the published documentation?

The official documentation for Windows is at least partly responsible. The manuals for Windows and the Windows SDK are terribly literal. Given the diverse audience for Windows, they probably have to be this way. The official documentation explains how to do things, but does not delve deeply into why things work the way they do, or how to choose among several alternate ways of getting something done. They give no hint that strategy might play a role in how the software is used.

In contrast, *Undocumented Windows* pushes strategy into the foreground. Someone looking for undocumented features will use a piece of software differently from someone who is not. And once it is acknowledged that there is more to using the software than knowing the syntax of the commands, the world opens up considerably.

This whole complex of events (the existence and revelation of internals and undocumented features, the exhilaration that comes from knowing something that someone else tried to conceal, and the realization that there is a strategic component to the use of software) is difficult to translate into UNIX culture.

This is so partly because the boundaries that define what is internal, what is undocumented, and what is proprietary are not very clearly drawn in the personal computer world.

Internals are the components of the system that its users cannot directly affect; any product's "internals" are the algorithms, processes, and structures that are on the other side of the user interface. A product's source code is the definitive description of its internals.

> **The questions that arise in the UNIX world are more likely to be concerned with the operating system's "internals" than with either the quest for "undocumented" features or the protection of trade secrets.**

Internals are not necessarily proprietary and need not be "undocumented." There is a moderately brisk business in publishing books about UNIX internals.

These books tend to be prosy discussions of the structures and algorithms used in UNIX source code, and while they are most useful to people with access to UNIX source code, more than a few members of the UNIX community have learned UNIX internals tolerably well from these books without source code access. (See Maurice Bach, *The Design of the UNIX Operating System*, Prentice Hall, 1986, or Leffler, et. al., *The Design and Imple-*

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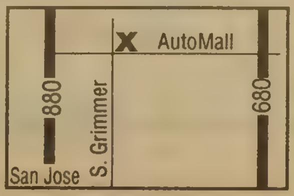

mentation of the 4.3BSD UNIX Operating System, Addison Wesley, 1989. There are also books that address "UNIX-like" internals: Douglas Comer, *Operating System Design: the Xinu Approach*, Prentice Hall, 1984.)

Books about UNIX internals are generally not as stimulating as the Schulman books. Better awareness of UNIX internals is unlikely to change either the way one uses UNIX or the way one reads the UNIX documentation. (The book that best reveals the strategic element in using UNIX is by Brian Kernighan and Rob Pike, *The UNIX Programming Environment*, Prentice Hall, 1984.)

"Undocumented" simply means missing from the documentation. Apparently there is a tendency to confuse "internal" with "undocumented," simply because both may be hidden from view. Things that are missing from the documentation are not necessarily internals: they may be features of the product, elements of its behavior, diagnostic tools not intended for a general audience, or any number of other things. Nor are things that go undocumented necessarily proprietary.

Finally, "proprietary" refers to information that a manufacturer wishes to protect with legal strictures. Of course, it is silly for a manufacturer to protect as proprietary information that which is readily available. Trade secrets must really be secrets in some sense.

The questions that arise in the UNIX world are more likely to be concerned with the operating system's "internals" than with either the quest for "undocumented" features or the protection of trade secrets.

Indeed, the biggest recent event involving proprietary rights is the ongoing "Open Systems Crusade," begun several years ago. In stark contrast to the way trade secrets are protected in the PC world, a number of AT&T's UNIX licensees organized to protect themselves against the possibility that a Sun/AT&T alliance would jeopardize the "portability" of UNIX. In effect, the licensees were protecting themselves against a too restrictive notion of what is proprietary. (There were, of course, no disinterested crusaders, and for a while, the phrase "open system" threatened to become a code word referring to the "proprietary stuff" of whoever was speaking at the time.)

STANDARDS

Think for a moment about how Yggdrasil's Linux/GNU/X offering illustrates the interplay of internals, documentation and proprietary information.

Linux, originally created by Linus Torvalds and extended by a far-flung community of interested parties, is yet another of the many UNIX-like things in the world. It has the distinctive (though not copyrighted) look and feel of UNIX. Linux commands look like UNIX commands, and the operating system does all the multiuser, multitasking things UNIX does. However, Linux contains no UNIX source code; it does not impinge on any trade secrets.

Yggdrasil is one of several sources for Linux systems. The Yggdrasil package includes Linux and its source code, a complete X Windows distribution, the GNU development environment, and an assortment of drivers for extended audio and video facilities. The inclusion of source code makes it difficult to say that anything about the system is "undocumented."

WORLDS COLLIDE

Yggdrasil is hardly representative of the UNIX industry's mainstream, but even large com-

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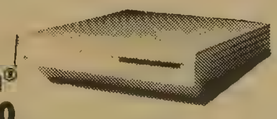

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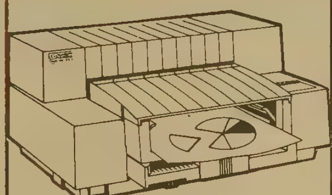

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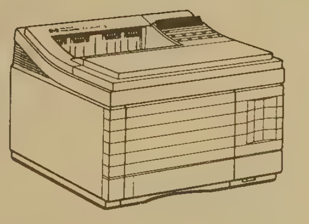

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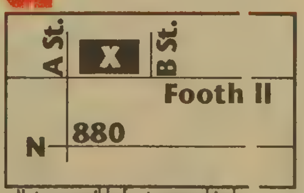

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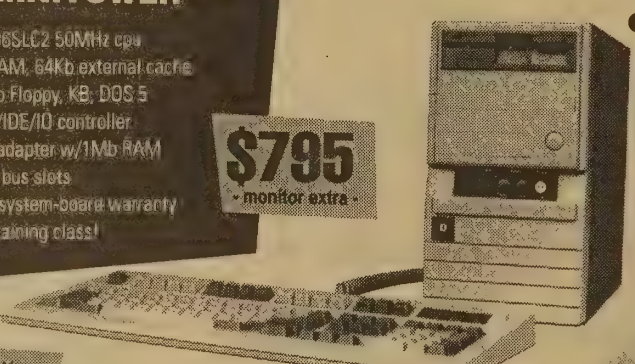

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panies (Sun Microsystems, for example) that profit handsomely off of UNIX have something in common with Yggdrasil. Sun's UNIX operating system undoubtedly has its share of proprietary nooks and crannies, but it is nevertheless based on a product that Sun does not own outright (AT&T's UNIX), whose source code has been widely distributed. The portions of that product that might constitute an API (essentially the C Language Libraries) are tightly governed by recognized standards.

Things are considerably different in the Windows world. Certainly Windows has both internals (layers of activity to which end-users and application developers alike have no access) and undocumented features. But the Windows technology is relatively new, runs on a unified hardware platform, and is owned entirely by Microsoft.

Consequently Microsoft can vociferously protect its trade secrets. There are relatively few messy questions of ownership, not much need to placate vendors of wildly diverse hardware architectures, not much in the way of standards, and no entrenched cultural consensus about the status of Windows' internals (a large installed base is not necessarily a culture).

For reasons that are not entirely clear, however, things do change. On the UNIX side, Novell has now purchased AT&T's Unix System Laboratories and is, in effect, the owner of UNIX. The full effects of this transition have yet to be felt. Certainly the change of ownership provides an opportunity to voice a new opinion about what is proprietary and what is not in the UNIX world. The hardware manufacturers seem to be generally happy with the change; after all, UNIX development will no longer be carried out by a competitor for hardware sales. The attitude of software manufacturers is not readily apparent, but one expectation is that Novell will rely on UNIX to compete with Microsoft. If Backmatter's Theorem of Corporate Competition ("You become who you compete with.") holds true, the UNIX world may be in for some cultural changes.

Microsoft, on the other hand, is promoting new products (chiefly Windows NT) for architectures other than Intel, and consequently portability and standards conformance will become bigger issues with Microsoft than they have been in the past. This shift of emphasis can potentially change the prevailing attitude toward proprietary information, internals, and undocumented features.

While awaiting further developments, I'd suggest investigating CD-ROMs and Undocumented Love. ■

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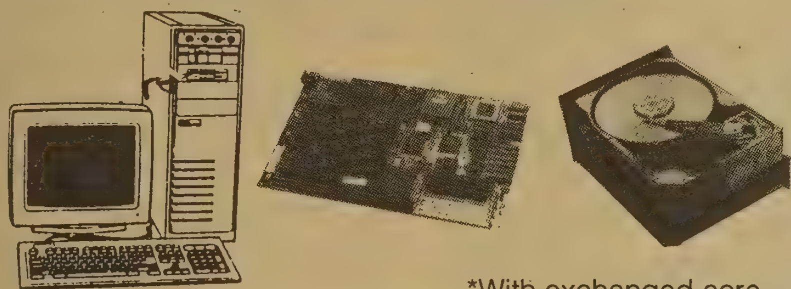

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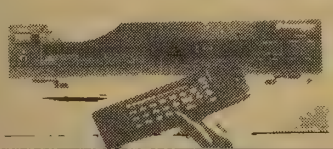

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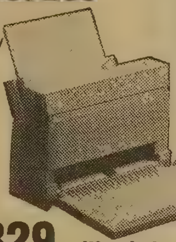

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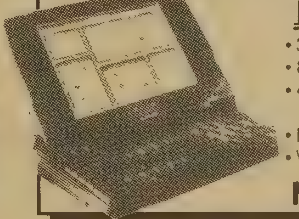

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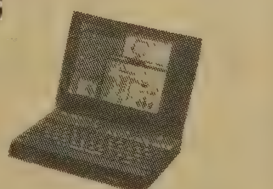

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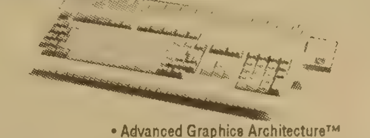

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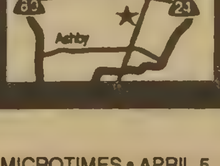


Timbuktu For Mac & Windows

Cross-Platform Connectivity

BY LENNY BAILES

Farallon's Timbuktu 5.01 for the Macintosh allows for a new level of cross-platform connectivity when combined with the new Timbuktu for Windows. The software lets Windows users share network laser printers with Mac users, and provides peer-to-peer file exchange and cross-platform application support. Files may be exchanged across the network without using a dedicated server, and Mac and PC users may work together on projects in real time.

For years, users have wanted to connect Macs and PCs and get them to run each other's software. Although Insignia's Soft PC can emulate the MS-DOS operating system on a Macintosh, it is sluggish and temperamental. Farallon's twin Timbuktus allow file sharing, screen sharing, and remote control access.

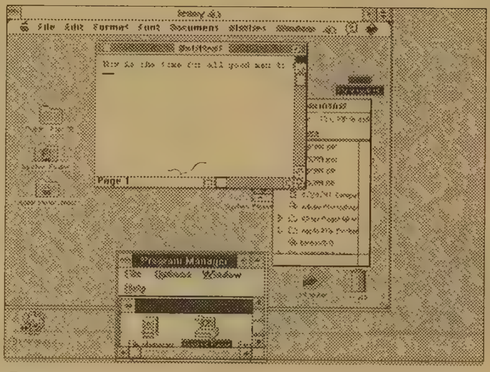
At AppleTalk speeds, running Windows remotely on the Mac is a bit sluggish for standalone productivity, but the screen and file sharing features are robust enough to be useful. Desktop publishers may readily exchange files through Timbuktu while PageMaker or Quark XPress remains open and active locally.

The remote control feature may be useful as a means for a supervisor to inspect or revise work done by colleagues logged into the network. You can also use the remote control feature for instructional purposes. A trainer may walk through the steps involved in setting up a spreadsheet or formatting a document, while the trainee observes. For instance, after a demonstration on how to wrap text around a graphic image, the trainee may repeat the lesson while the trainer observes.

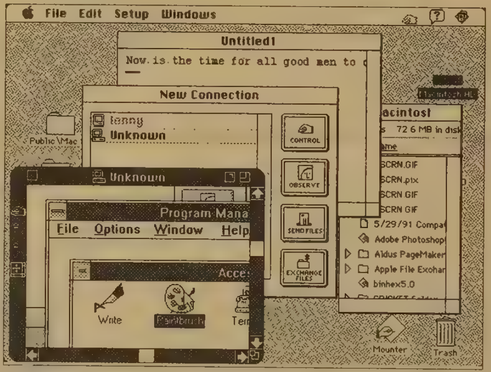
With a faster network than AppleTalk, the attractiveness of the remote control feature is enhanced. Ethernet and Token Ring networks can be used as a pathway to LocalTalk devices. Remote control does work under LocalTalk, but is only slightly faster than dialing into a machine via modem.

SETUP

Timbuktu makes use of Mac System 7's built-in networking to assign hierarchical user privileges. (Two Windows machines running individually licensed copies of Timbuktu may also use the hierarchical access feature to connect to one another.) Timbuktu allows users five privilege options: Exchange files/copy to, exchange files/copy from, exchange files/remove, observe, and control. In addition to a master password to access a remote machine, individual users may be assigned passwords and access privileges in any of the five categories. You may set up one-way or bidirectional user access.



System 7 running on a PC in an MS Windows window.



Now is the time for all good men to

Windows running in a window on the Mac.

MS-DOS machines may share an AppleTalk printer outside of Windows through Farallon's underlying Phonenet software or through Windows Timbuktu's version of "The Chooser." Macintosh users may access a printer connected to a DOS machine through Windows, using Windows applications.

Setting up Timbuktu on a Mac running System 7 is a transparent process. Once it is installed, all you need to do is go into the standard Apple Control Panel to enable file sharing as you would with any LocalTalk network. Timbuktu for the Mac installs itself as a desk accessory. No additional hardware is necessary on the Mac side, although a faster, Ethernet card may greatly speed up performance.

Setting up Timbuktu on the MS-DOS machine is a transparent process, provided you have a compatible PC. I discovered that the PhoneNet II card provided with Timbuktu for Windows would not perform correctly when I attempted to place it in a 33MHz, 486DX machine. When the card was inserted into another machine (a 40MHz 386DX) there were no problems. The installation from disk was routine, and connection to a Mac IIci was established as soon as I plugged in the cable.

PERFORMANCE

Timbuktu for Windows sits on top of Farallon's PhoneNet software. The first thing I did after the connection was established was to enable "Guest access" and log into the Mac. I opened MS Word remotely and found performance only slightly sluggish. It would actually be possible to prepare a document remotely, although the process would be akin to running Word for Windows on a slower 286 or 16MHz 386SX. When I ran over to the Mac side to access Windows I found that performance in Windows Write and Word for Windows was below the speed threshold at which I can work comfortably. Perhaps on a Powerbook or a Quadra the situation would be different.

Although the cross-platform remote control feature is heuristically the most interesting feature of Timbuktu, the support for file and screen sharing would be the factor I'd consider most in deciding whether to buy it. The package is configured to do "smart transfers," recognizing files from applications that run on both platforms and automatically appending the correct filetype and creator. The ability to remove and add directories and folders recommends Timbuktu for system administrative work. The package also has the ability to dump the current screen to either the Mac or the Windows clipboard, recommending it in situations where desktop publishing or multimedia is done on both platforms. ■

RESOURCES:

Timbuktu for Mac/ Timbuktu for Windows, $199
Farallon Phonenet II Card, $199
Farallon Computing, Inc.
2470 Mariner Square Loop
Alameda, CA 94501
(510)814-5100

Minimum configuration for PC: Windows 3.0a or higher with DOS 3.1 or higher, 80286 CPU, 3MB of RAM (4MB for Enhanced Mode), 1MB of hard disk space. One serialized copy of Timbuktu required per node. Minimum configuration for Mac: Macintosh + or better, System 6.05 or better, 2MB of RAM. One serialized copy of Timbuktu required per node.

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486DX-33MHz / 64K	$399.00
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486DX-50MHz / 256K	$575.00
486DX2-66MHz / 256K	$665.00
486DX-33MHz / 256K VL-Bus	$450.00
486DX2-66MHz / 256K VL-Bus	$688.00
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Computerizing Restaurants And Bars

A Nourishing Diet Of Management Information Can Be Cooked Up For Virtually Any Size Operation

BY DAVID A. SIMON, CPA AND JENNIFER ROBIN CHERNISS

Two major challenges facing restaurants and bars are controlling costs and complying with a myriad of tax and government reporting requirements. Well-designed and implemented computerized accounting and operations systems, accommodating the special considerations demanded by this industry, can address both these issues.

Full-service restaurants typically operate on thin margins, with pretax profits often only four to ten percent of sales. With such little leeway, regular monitoring of financial results is critical for controlling profitability and detecting problems in a timely manner.

Regular monitoring means that most restaurants should generate basic financial and managerial reports weekly, and even small establishments should not go for much longer than that. To accommodate this high frequency of review, simplicity in the accounting system is important. In many cases it is appropriate to sacrifice analytical detail for speed.

A well-operated restaurant continually generates a large amount and variety of financial information, of which the manager needs to decide what is most critical to analyze. This information is often so voluminous that, without computerization, it would be impractical to generate timely reports.

But according to Marc Halperin, a restaurant consultant based in Berkeley, much of the efficiency and financial control available from current systems is underutilized, either because the restaurant operator is unfamiliar with what is available, or because of the difficulties of training staff to more fully use this equipment.

ADD AUTOMATION TO TASTE

I'm frequently asked how large the restaurant should be before it computerizes. These days it's hard to imagine any establishment having greater complexity than the corner taco truck not having some degree of computerization. Rather than asking if they should automate, restaurateurs should usually address the more pertinent issue of how much computerization is appropriate.

A fully integrated system that may be suitable for an operation with at least $1 million of annual sales can include many components, among them the following:

- Point of sale system and software,
- Timekeeping system and software,
- Automated bar control system,
- Bar-coding systems (to record point-of-sale transactions and interface with inventory control programs), and
- General managerial computers and software.

Many additional software packages perform specific data analysis tasks, but with non-accounting functions. Some are available as standalone programs, while others can be integrated with the overall accounting system. Examples include packages that offer nutritional analysis, handle seating and reservations, and assist in menu management.

A cornucopia of industry-specific computer equipment and software is available, and it pays to be aware of these if you're in the business. A listing twenty-eight pages long has been compiled in Practitioner Publishing Company's *Guide to Restaurants and Bars* (See Resources listing).

KEEP IT SIMPLE

On the other hand, overautomating can spoil the broth. An overly complex accounting system that the staff never fully learns to use can be an enormous waste of time and money. Yet, many well-meaning managers, intending to buy the "best" available, neglect to factor into their decision the ability of their staff to install and operate all aspects of the system.

Regular readers of this feature have heard me preach that a simple, inexpensive, two-finger software package can be infinitely preferable to the highest end system available if the latter can't be supported within the limits of your personnel and other resources.

This barrier to computerization applies not only to the bean counters, but also to the back kitchen. According to Halperin, "Cooks and chefs that I deal with are predominately computer illiterate and, sadly, computerphobic." It's unfortunate, he says, because if the staff, including managers, can be brought to the present in technical orientation, "Tremendous opportunities are there in terms of efficiency and tighter margin control."

THE POINT-OF-SALE SYSTEM AS DATA SOURCE

A point-of-sale system is simply a machine that records a sale at the time it occurs. It can be anything from a basic cash register to laser scanners such as those in the grocery check-out line that boggled the mind of our last President.

Rather than asking if they should automate, restaurateurs should usually address the more pertinent issue of how much computerization is appropriate.

A simple electronic cash register in a bar or restaurant can be coded to permit accumulation of valuable information used to analyze sales. Most any such register can compute sales taxes applicable to different items. An expanded register might be fully programmable, to accumulate an array of information which is then tracked in a database. The following is a partial list of information relevant to analyzing the results of operations, as well as some specific applications:

•Total sales of each menu item. This data is not only useful for basic inventory needs, but can also be applied when conducting a margin analysis or for formulating marketing

continued on page 255

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David Simon, CPA (M.S., Taxation), is in tax and accounting practice in Oakland. His clients include a variety of professionals and businesses. He can be reached at (510)893-5753. Jennifer Robin Cherniss is a free-lance writer based in Berkeley.

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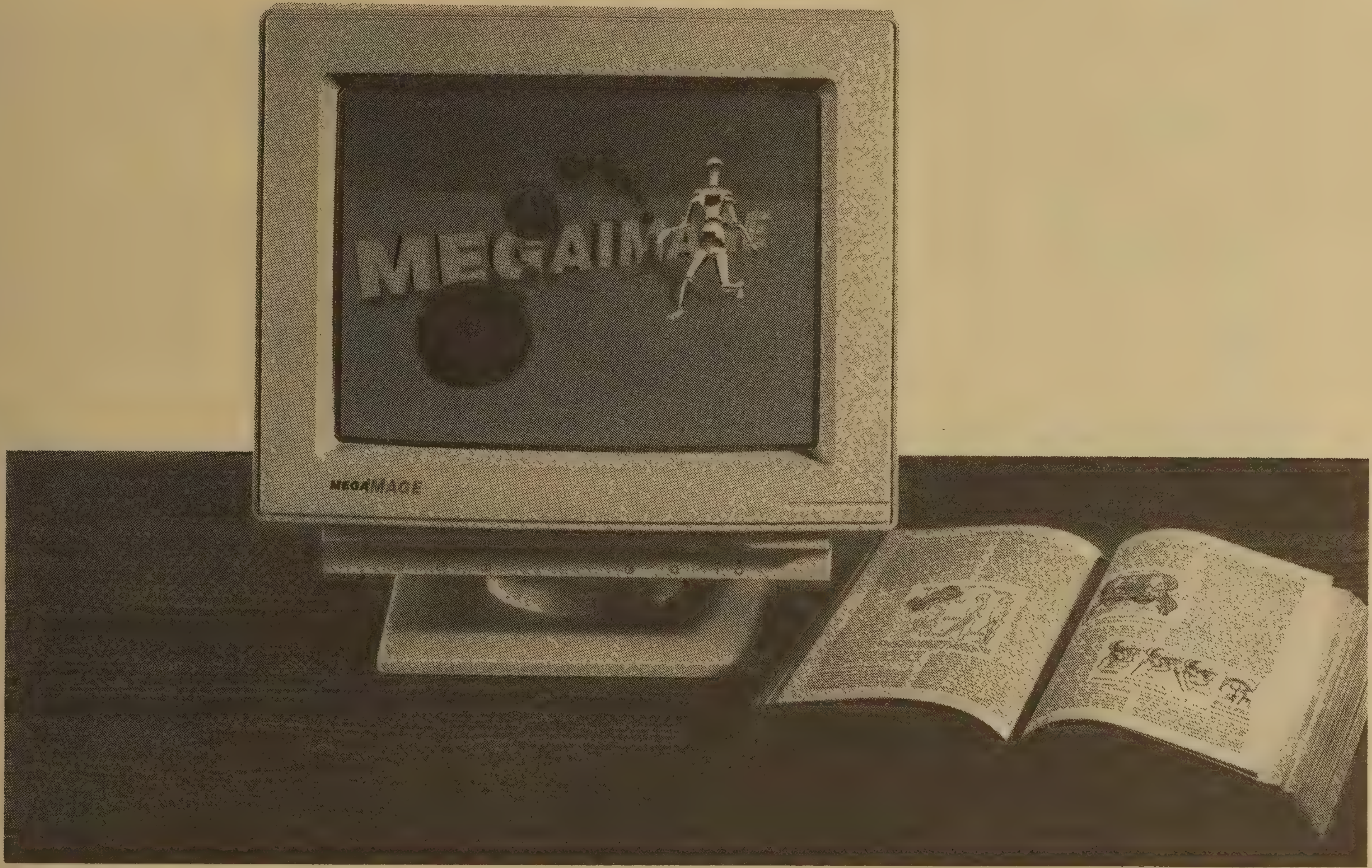

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Agenda-at-a-Glance

DB/EXPO '93

May 3–7, 1993

Moscone Center, San Francisco

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In-Depth Seminars

These full-day seminars provide in-depth information about the major database and information processing technologies in use today. Attendees will have the ability to question leading industry experts about key issues, and will be provided with a unique opportunity to get real solutions to their problems.

9:00-5:00
"Object-Oriented Database Systems"
Dr. Nathan Goodman
Whitehead Institute

9:00-5:00
"Evaluating and Using SQL Client/Server Software"
Richard Finkelstein
Performance Computing

9:00-5:00
"Opening Up Your OLTPSystem"
Alfred Spector
Transarc Corporation

Conferences

Client/Server Applications Development Conference:
Examines recent changes in development methods and tool technology, and explores how developers can take advantage of these new capabilities for building client/server applications.

Client/Server and Data Warehousing Conference:
Focuses on the issues of developing and maintaining applications and data in a distributed computing environment.

Open Systems and Unix OLTP Conference:
Reviews the status of open systems today, and takes a close look at how open systems and Unix are being used to develop OLTP applications.

Object-Oriented and Evolving Technologies Conference:
This conference will examine in detail the changes taking place in the database and information processing industry and will look at the effect new and evolving technologies will have on the future.

Desktop Database Conference:
Discusses the current state-of-the-art in three major desktop environments: Xbase, OS/2 and Apple. Looks at where this sector of the market is going over the next few years.

Windows Conference:
Looks at recent developments in Windows and how they affect the corporate database and information processing technology environment.

Executive DB/EXPO (Wednesday Only)
This one-day conference helps executives get a grip on the changes in database and information processing by taking a look at key technology issues that they will have to encounter over the next few years.

Real Application Solutions Conference:
Helps users evaluate database and information technology products by seeing how vendors answer and demonstrate solutions to a real Request for Proposal (RFP) for an order entry and inventory control application.

TUESDAY

9:00-9:45	9:45-10:30
Colin White DB/EXPO Conference Director	**Bill Gates** Microsoft

11:00-12:00	2:00-3:00	3:15-4:15	4:30-5:30
T01 Planning the Move to An Enterprise Client/Server Architecture	T02 A Practical Guide to OOA and OOD: Featuring the Object Game	C01 A Development Architecture for Client/Server	C02 CASE Strategies for Object-Oriented Client/Server Environments
T07 Building Portable Client/Server Applications	T08 Client/Server Application Performance	C06 Building Distributed Applications Using Inter-Program Messaging	C07 Using Cooperative Processing to Access Host Data
T13 The Reality of OLTP on Unix Today: Opportunities and Obstacles	T14 Platforms for Open Systems	C11 An Integrated DBMS & Transaction Manager Development Platform	C12 DB2's Role in the Distributed and Open Systems Environment
T19 Re-engineering Legacy Applications for Use in an Object-Oriented Paradigm	T20 Handling Compound Documents in Database Systems	C16 Text Retrieval in the Corporate Environment	C17 Managing & Accessing Data in Heterogeneous Database Environments
T25 Desktop Database Directions	T26 Relational Database Fundamentals for Desktop Developers	C21 Business Partners: The PC Database and Client/Server	C22 Desktop Database Application Design: GUI's, Object Technology & Client/Server
T31 What Does Windows NT Mean to the Database User?	T32 Connecting Windows Workgroups to Host Systems	C26 Using Windows for Developing OLTP Applications	C27 Providing Information to the Business User

Exposition Hours Tuesday–11:00-5:00

DB/EXPO Exposition

Visit 500 booths staffed by key developers and leading vendor representatives. Go one-on-one with the latest hardware and software solutions and test the validity of the newest technologies and tools.

WEDNESDAY THURSDAY FRIDAY

9:45-10:30	12:30-1:15	3:30-4:15	9:00-9:45	1:00-1:45	4:00-4:45
Philippe Kahn Borland	**Steven Jobs** NeXT	**Dr. Robert Epstein** Sybase	**Jim Groff** Apple	**Larry Ellison** Oracle	**Dr. Patricia Selinger** IBM

Keynote Addresses

Hear what's in store for us from industry leaders who are shaping the future of database products and technologies.

8:30-9:30	11:00-12:00	2:15-3:15	4:30-5:30	10:00-11:00	11:30-12:30	2:45-3:45
T03 Modeling Client/Server Applications Using the Zachman Framework	T04 Application Design for Client/Server: Hints and Tips	C03 Moving From a Centralized to a Distributed Application Environment	C04 Server Based Dictionaries for Client/Server Application Development	T05 Building COBOL Cooperative Processing Applications	T06 Connecting an Object Front-End to a Legacy Back-End	C05 Client/Server Development Tool Directions
T09 Standards for Remote Data Access	T10 Selecting the Right Database Gateway: A Case Study	C08 Information Warehouse Architecture	C09 Data Warehousing Experiences	T11 Designing and Implementing a Data Warehouse	T12 A Client/Server Architecture for Open Systems	C10 Approaches to Accessing Legacy Data
T15 Unix Integrity, Security and Administration: Mainframe Equality?	T16 Distributed OLTP: Selecting the Right Tools and Techniques	C13 Moveable Client/Server Applications	C14 Lessons For Using Client/Server OLTP Technology	T17 Open Systems Applications Development	T18 Tools & Techniques for Managing a Distributed Computing Environment	C15 Distributed Management Environments: What's Possible Today?
T21 Object Database Application Development	T22 Expert Systems and Intelligent Databases	C18 Experiences with Multi-Media in Database Applications	C19 Extending Relational with Object-Oriented Capabilities	T23 Parallel Query & Transaction Processing with Relational DBMSs	T24 SQL2: The SQL-92 Standard	
T27 Xbase: Language, Development Strategies and Product Trends	T28 IBM and OS/2 Unix Database Directions	C23 OOP and GUI For the Development of Business Applications	C24 Building Workgroup Application Solutions with OS/2	T29 Cleaning Up Corporate Data For End-User Access	T30 Apple Client/Server and Interoperability Solutions	C25 Macintosh Client/Server User Experiences
T33 Designing GUIs for Client/Server Applications	T34 Database Access Standards: ODBC, IDAPI	C28 GUI Design: A User Case Study	C29 The Operating System Debate: Windows NT vs. OS/2 vs. Unix	T35 Building Mail-Enabled Applications	T36 Techniques for Developing Cooperative Processing Applications in Windows	C30 Experience With Windows-Based Development Tools

In-Depth Seminars

These full-day seminars provide in-depth information about the major database and information processing technologies in use today. Attendees will have the ability to question leading industry experts about key issues, and will be provided with a unique opportunity to get real solutions to their problems.

9:00-5:00
"Advanced Aspects of The Relational Model"
Chris Date
Codd and Date, Inc.

9:00-5:00
"Developing Client/Server and Cooperative Processing Applications"
Chris Loosley and Colin White
Database Associates

9:00-5:00
"The Reality of Unix As An Application Platform"
Michael A. Goulde
Patricia Seybold Group's Open Information Systems

8:30-9:30	9:45-10:45	11:00-12:00	1:00-2:00
E01 Getting Ready For Tomorrow's Information Technologies	E02 Economics for Open Systems	E03 Business Process Engineering and Client/Server: Practical Approaches and Experiences	E04 Organizing IS For New Information Technologies
2:15-3:15	**3:30-4:30**	**4:45-5:30**	
E05 Object Database Development and Deployment	E06 Establishing A Corporate Downsizing/Rightsizing Strategy	E07 Corporate Computing in the '90s	

Exposition Hours Wednesday—11:00-6:00

Exposition Hours Thursday—11:00-4:00

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- User Group Events
- Product Education Center
- Product Announcement Spotlight
- Virtual Reality Demonstration

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Colin White

DB/EXPO Conference Director

"Information Technology: Yesterday, Today, Tomorrow"
Tuesday May 4, 9:00

Bill Gates

Microsoft Corporation

"Directions in Workgroup Computing"
Tuesday May 4, 9:45

Philippe Kahn

Borland International

"Application Development: Where are We Headed?"
Wednesday May 5, 9:45

Steven Jobs

NeXT Computer

"Object-Oriented Application Development"
Wednesday May 5, 12:30

Larry Ellison

Oracle Corporation

"Industry Directions"
Thursday May 6, 1:30

Umang Gupta

Gupta Corporation

"Client/Server Comes of Age"

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22 Marketing (VP, DIR, MGR)
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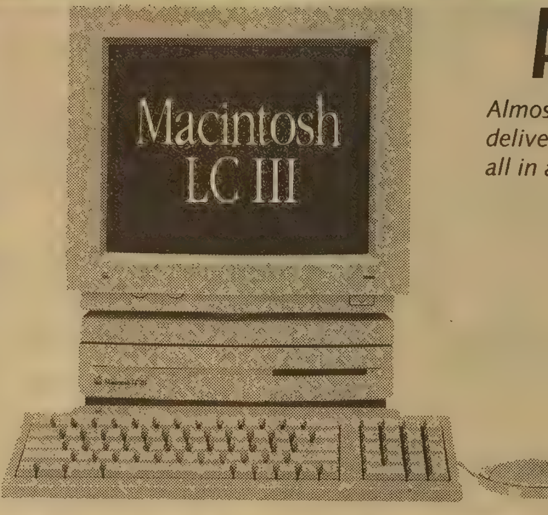

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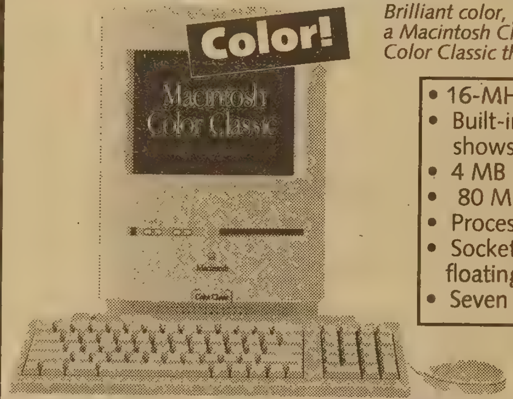
$44 Month Business Lease*

WAREHOUSE PRICING!

The Complete Color Package.

Apple® Macintosh® Color Classic ®



Brilliant color, plus the convenience and affordability of a Macintosh Classic computer, makes the Macintosh Color Classic the ultimate personal Macintosh.

- 16-MHz 68030 microprocessor
- Built-in, high-performance color display shows 256 colors
- 4 MB of RAM, expandable to 10 MB
- 80 MB hard drive
- Processor-direct slot for expansion cards
- Socket for optional math coprocessor or floating point unit
- Seven built-in ports for peripheral devices

$1299

The Perfect Choice for Education or Business.

Apple® Macintosh® LCII

Macintosh LC II

The Macintosh LC II offers solid performance and room for expansion, making it the perfect choice for education or business.

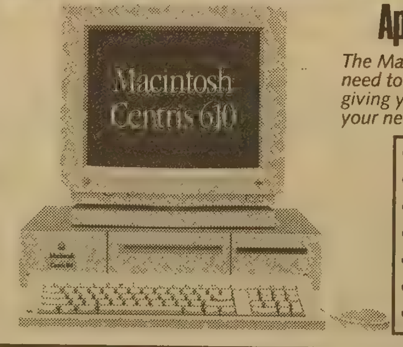
- 16-MHz 68030 microprocessor
- 4 MB of RAM, expandable to 10 MB
- 160 MB hard drive
- Slender, modular design
- Sound capabilities
- Built-in support for 256 colors
- Processor-direct slot

Keyboard & Monitor Extra

$1149

Exceptional Processing Power at an Affordable Price.

Apple® Macintosh Centris™ 610



The Macintosh Centris 610 delivers the high performance you need to get the job done in a demanding environment, while giving you the flexibility to configure your system to meet your needs today and tomorrow.

- 20-MHz 68040 microprocessor
- 4 MB of RAM, expandable to 68 MB
- 80 MB hard drive
- Works with all Apple displays
- 256 colors, expandable to 32,768
- Eight built-in ports for peripherals
- Slot for additional expansion card

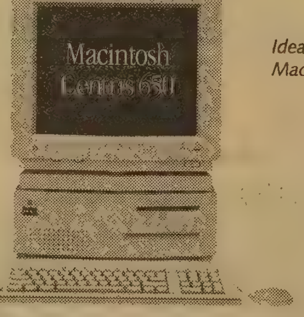
Keyboard & Monitor Extra
M1345LL/A

$1699

$54 Month Business Lease*

High Performance. Maximum Flexibility.

Apple® Macintosh Centris™ 650



Ideal for mainstream business and professional users, the Macintosh Centris 650 is designed for performance and flexibility.

- 25-MHz 68040 processor
- 4 MB of RAM, expandable to 132 MB
- 80 MB hard drive
- Works with all Apple displays
- 256 colors, expandable to 32,768
- Eight built-in ports for peripherals
- Three expansion slots
- One inline 68040 processor-direct slot
- 68040 socket for optional math coprocessor

Keyboard & Monitor Extra
M1276LL/A

$2399

$76 Month Business Lease*

*LIMITED QUANTITIES ON SOME PRODUCTS - SEE STORES FOR AVAILABILITY LEASING AVAILABLE THROUGH AT&T. PRICES BASED ON 48 MONTH LEASE WITH 10% BUYOUT OPTIONAL
*Reseller must have product in stock in order to qualify for price matching.

Authorized Reseller

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We'll Match Any Price From Any Authorized Apple® Reseller On Any Apple® Product!*

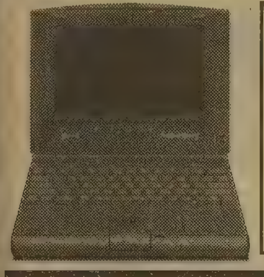
0% FINANCING 6 FOR 6 MONTHS

The New Incredibly Compact Notebook!

The Best of Both Worlds

Apple® Macintosh® PowerBook Duo™210

The PowerBook Duo 210 delivers the full power and ease of Macintosh computing in a 4-pound package that you can take anywhere — and can become part of a complete desktop Macintosh system when you bring it back to your desk.



- 25-MHz 68030 microprocessor
- 4 MB of RAM, expandable to 24 MB
- 80 MB hard drive
- Slots for internal modem and RAM
- Docking connector
- 9-inch diagonal display with 16-level gray scale
- Nickel hydride batteries for 2 to 4.5 hours of use
- No cables or networking software needed

$61 Month Business Lease*

$1929

High Performance at Home or Away.

Apple® Macintosh® PowerBook Duo™230

The newest member of one of the world's most widely acclaimed lines of notebook computers, the PowerBook Duo 230 packs tremendous computing power in a package just 1.4 inches thick.

- 33-MHz 68030 microprocessor
- 4 MB of RAM, expandable to 24 MB
- 120 MB hard drive
- Slots for internal modem and RAM
- Docking connector
- 9-inch diagonal display with 16-level gray scale
- Nickel hydride batteries for 2 to 4.5 hours of use
- Performance comparable to high-end Macintosh II desktop computers

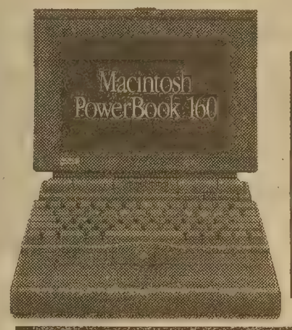
$80 Month Business Lease*

$2549

Power & Flexibility Have Never Been So Easy To Take on the Road

Apple® Macintosh® PowerBook™ 160

The PowerBook 160 delivers speed, flexibility, and convenience in a highly acclaimed, all-in-one design.



- 25-MHz 68030 microprocessor
- 4 MB of RAM, expandable to 14 MB
- 40 MB hard drive
- Seven ports for peripherals, including video-out for external color displays
- Slots for internal modem and RAM
- Full page width, 10-inch diagonal display with 16-level gray scale
- Adjustable brightness and contrast controls

$68 Month Business Lease*

$2175

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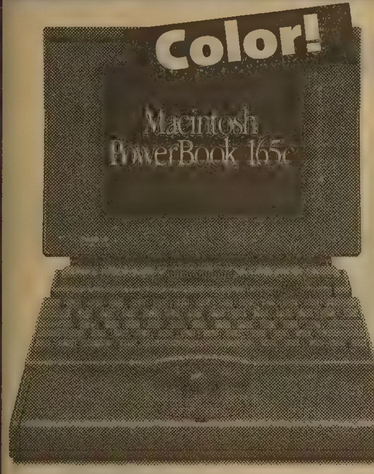
Color & Power in a Notebook Computer.



Apple® Macintosh® PowerBook® 165c

The PowerBook 165c delivers the processing speed, flexibility, and convenience you need — all in a package that weighs just seven pounds and fits into a briefcase.

- 33-MHz 68030 microprocessor
- 33-MHz 68882 math coprocessor
- 4 MB of RAM, expandable to 14 MB
- 9-inch diagonal display showing 256 colors
- Bright, backlit, passive matrix, 640 by 400 pixels
- Seven ports for peripherals, including video-out for external color displays
- Slots for internal modem and memory

**4MB RAM
80 MB HD**

$101 Month Business Lease*

$3199

The Most Powerful Powerbook.

Macintosh
PowerBook 180

Apple® Macintosh® PowerBook® 180

The PowerBook 180 is the top-of-the-line Macintosh PowerBook, delivering speed, flexibility, and convenience in a highly acclaimed, all-in-one design.

- 33-MHz 68030 microprocessor
- 33-MHz 68882 math coprocessor
- 4 MB of RAM, expandable to 14 MB
- Seven ports for peripherals, including video-out for external color displays
- Slots for internal modem and RAM
- Full page width 10-inch diagonal display with 16-level gray scale
- Bright, backlit active matrix, 640 by 400 pixels
- Adjustable brightness and contrast controls

**4MB RAM
80 MB HD**

$120 Month Business Lease*

$3799

The Perfect Personal Printer.

Apple® LaserWriter® Select 300

The Apple LaserWriter Select 300 provides laser printing with high-quality results, printer sharing from multiple Macintosh, and extensive paper-handling capabilities.

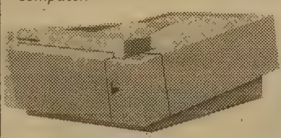
- 300 dpi for high-quality text
- Grayscale printing for sharp graphics
- 39 scalable fonts for printing in any size and a wide range of styles
- User-installable paper handling options
- 250-sheet automatic tray and manual feed tray included
- Compact design fits any desktop

$799

An Exceptional Value in a Compact Laser Printer.

Apple® Personal LaserWriter® NTR

the Apple Personal LaserWriter NTR offers high-quality laser printing at an affordable price, making it an ideal companion to your home or office computer.



- High-speed RISC processor
- High-quality graphics and text
- Easy to use with any Macintosh
- Can be easily connected to Apple Macintosh and MS-DOS computers simultaneously

$49 Month Business Lease*

$1299

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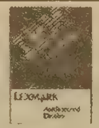
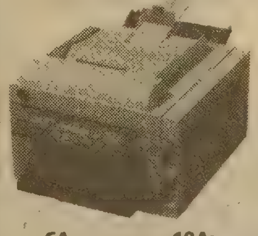
IBM® Laser Printer 6A & 10A





Nobody beats IBM for affordable high-resolution output from your Apple Macintosh®. Check these features: bi-directional AppleTalk, true Adobe PostScript, small footprint, superior paper handling, contrast and darkness controls, built-in text smoothing. Plus, the 10-page-per-minute 10A comes standard with 600 DPI resolution! (The 6-page-per-minute 6A easily upgrades to 600 DPI.)

6A: 1799 **10A: 2295**

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We'll Match Any HP Price From Any Reseller On Any HP Product!*

HP Deskwriter Printer

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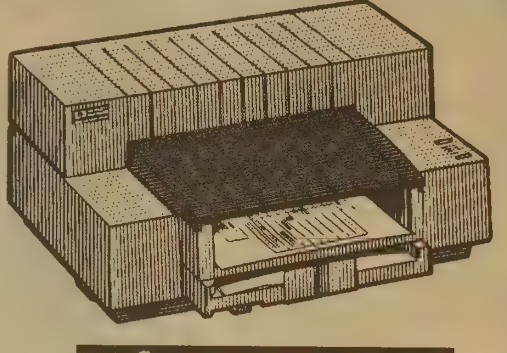


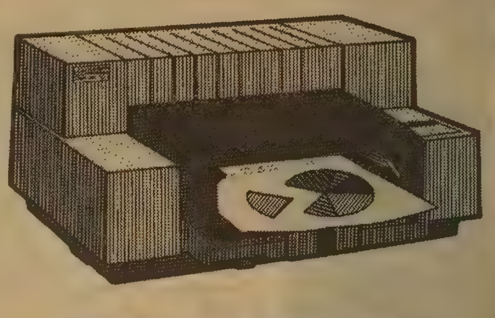
Don't settle for less than perfect, professional-looking documents. The Deskwriter prints at a smooth 300 dpi, it's affordable, and it's compatible with AppleTalk® for use with your Apple® Macintosh® personal computer.

Limited Supply

$50 REBATE
EXTENDED TO 4-30-93

HP DeskWriter C Printer

HEWLETT PACKARD



The HP DeskWriter C adds color capacity to an already famous laser quality black output. It's compatible with Apple® Macintosh® personal computers—and your budget.

$50 REBATE
EXTENDED TO 4-30-93

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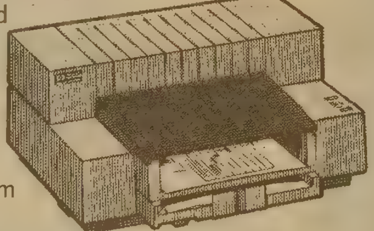
HP DeskJet 500 Printer

HEWLETT PACKARD

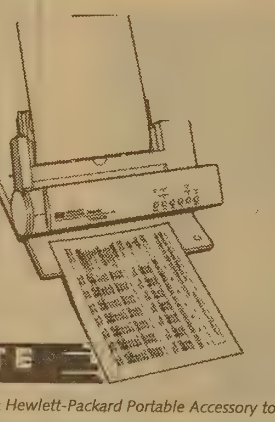


Get laser-sharp printing from all your DOS and Windows applications at a dot-matrix price. This instant classic inkjet printer from HP works with TrueType or font-scaling software to give you perfect type at any size.

$365.

HP DeskJet Portable Printer

HEWLETT PACKARD



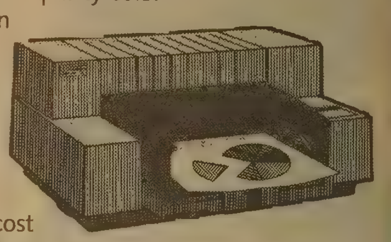
Now you can take famous DeskJet 300 dpi laser-quality output anywhere. Weighs just 4.4 lbs; prints 3 pages per minute (up to 100 pages on one charge). Pictured w/optional cut-sheet feeder.

$75 REBATE

** See store for details. Must purchase a Hewlett-Packard Portable Accessory to be eligible. Effective 3-1-93–6-30-93.*

HP DeskJet 500C Printer

HEWLETT PACKARD

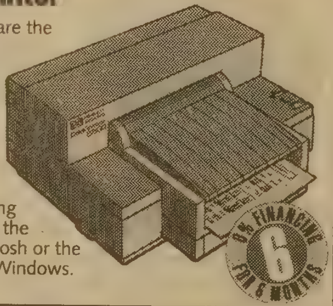


Get 300 dpi laser- quality color printing on plain paper and transparencies, for persuasive design and presentation power at a fraction of the cost of a color laser printer. Supports all major software including Windows; 3-year limited warranty.

$499.

DeskWriter 550C Printer & DeskJet 550C Printer

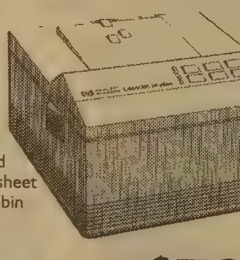
HEWLETT PACKARD



These capable new printers are the perfect answer for small businesses that do occasional presentations and graphics. They'll give you full color output for beautiful pictures or true black output for crisp text, all at a laser-quality 300 dpi—and all without switching ink cartridges. Choose from the DeskWriter 550C for Macintosh or the DeskJet 550C for DOS and Windows.

HP LaserJet IIP+ Printer

HEWLETT PACKARD

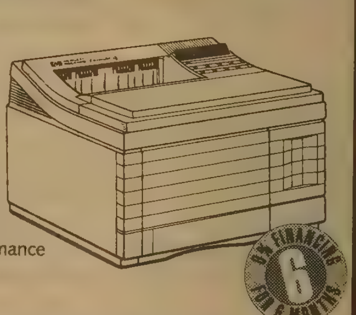


HP's most affordable laser printer is compact enough to fit in the most crowded offices and churns out a solid 4 pages per minute of high-quality, 300 dpi text and graphics. (An optional 250-sheet cassette is available for dual-bin printing.)

$799.

HP LaserJet 4 Printer

HEWLETT PACKARD



HP takes laser printing to the fourth dimension with this surprisingly affordable 600 dots-per-inch printer. (That's twice the resolution of the LaserJet III.) With 45 fonts, 8 page-per-minute speed, fast output from Windows, and, of course, the great network performance you'd expect from HP.

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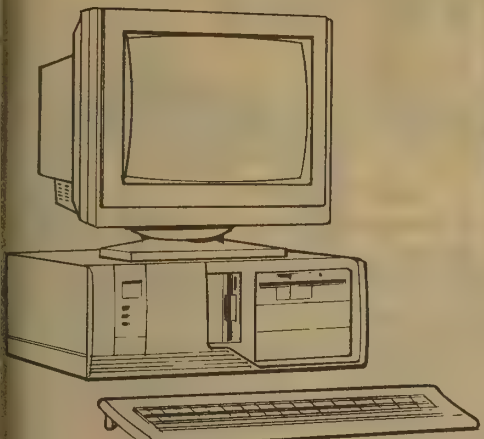

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DESK TOP SYSTEM

386SX–25 MHz

- 1MB RAM upgradeable to 16 MB
- IDE Interface, 2FD, 2 HD, 1 parallel, 2 serial, 1 game I/O • 101 keyboard
- 1.2 MB floppy drive

Monitor Extra
#SUNLCA0001

$369

DESK TOP SYSTEM

386DX–40 MHz

- 1MB RAM upgradeable to 32 MB
- 64K RAM cache upgradeable to 256 K
- 1.2 MB floppy drive • IDE Interface, 2FD, 2 HD, 1 parallel, 2 serial, 1 game I/O
- 101 keyboard

Monitor Extra
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$599

DESK TOP SYSTEM

486DX–33 MHz

- 1MB RAM upgradeable to 32 MB • 64K RAM cache upgradeable to 256 K • 1.2 MB floppy drive • IDE Interface, 2FD, 2 HD, 1 parallel, 2 serial, 1 game I/O • 101 keyboard

Desk Top System
Monitor Extra
#SUNLCA0004

$699

DESK TOP SYSTEM

386SX–33 MHz 105 MB HD

- 2 MB RAM upgradable to 32 MB
- SVGA w/512 K video memory
- 3-1/2 & 5-1/4 floppy drives • 101 keyboard • 200 watt power supply
- MS DOS 5.0 • Windows 3.1
- Mc-Afee Antivirus • 1 yr depot warranty

Monitor Extra #CCWSCA0027

$799

DESK TOP SYSTEM

486DX–50 MHz

- 1MB RAM upgradeable to 32 MB
- 64K RAM cache upgradeable to 256 K
- 1.2 MB floppy drive • IDE Interface, 2FD, 2 HD, 1 parallel, 2 serial, 1 game I/O • 101 keyboard

Monitor Extra
#SUNLCA0005

TOSHIBA

Toshiba Satellite T1850

- 6.8 lbs light
- Brilliant i386SX-25 MHz processor
- 64-gray VGA display
- 80 MB hard drive
- Universal 3-1/2″ floppy drive
- 4 MB RAM (expandable to 12) gives Windows a rocket boost

$1699.

Satellite
T1850

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6
FOR 6 MONTHS

SPECIAL PACKAGE WITH SOFTWARE PRE-INSTALLED
FREE
$300 DOLLAR VALUE

Includes: MicroSoft® Windows 3.1™, MS DOS® 5.0, UltraFont, trackball mouse, instructional video.

* Some Toshiba products have limited availability.

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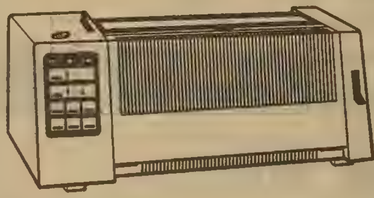
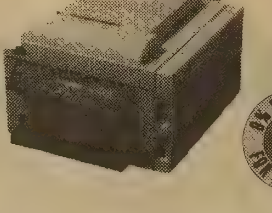
IBM® PPSII 2380



IBM takes impact printing seriously as you and your business. This solid, reliable 9-pin printer is built with a straight paper path so six-part forms and thick paper print the right the first time.

$319

IBM® Laser Printers 6 & 10

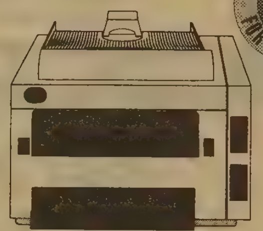


0% FINANCING 6 FOR 6 MONTHS

IBM's Laser 6 and 10 come standard with a 200-sheet tray, and IBM's Print Quality Enhancement; optional envelope and extra paper drawers and an option for PostScript.®

6: $1299 10: $1599

IBM Laser Printer E



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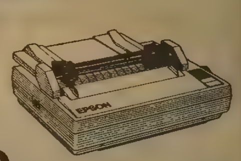
IBM's most affordable laser printer is built to fit on any desktop, prints 5 ppm, 300 dpi, and is built to meet demanding IBM standards.
Limited Supply

829.

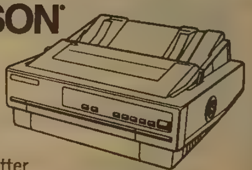
LX-810 EPSON

9 Pin • SmartPark™ paper handling • 200 CPS Super draft • 30 CPS NLQ • High resolution graphics



169.

LQ-570 EPSON



This 24 pin printer utilizes scalable fonts, enhanced graphics, and advanced paper handling to offer better performance.

269.

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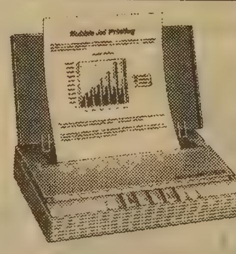
WAREHOUSE PRICING!

Canon BJ-10ex Canon

The Canon BJ10ex gives you high-quality document, anywhere, anytime. This portable printer has 360 dpi resolution and battery operation. Optional battery and sheet feed.

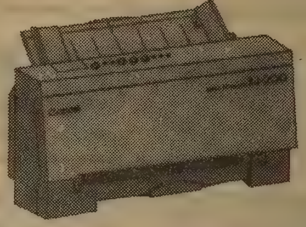


$289.

Canon BJ-200 Canon

Canon's new Bubble Jet printer incorporates new print technology that produces laser-quality printing at a truly affordable price.

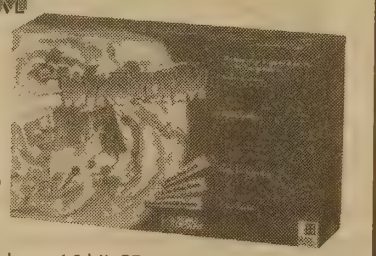
$50 REBATE
SEE STORE FOR DETAILS



WINSTORM

SIGMA DESIGNS

Windows Multimedia Display Adapter



• 24 bit true color video • 16 bit CD stereo • .72 H2 vertical refresh at 102x768 • SCSI CD-ROM interface • MIDI I/F • Joystick port • 3 multimedia titles.

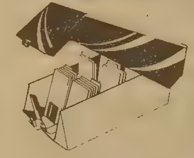
$399.99

WINSTORM

CD-ROM Multimedia Upgrade Kit

All the features of the WinStorm Multimedia Display Adapter Plus • 300 KB internal double speed CD-ROM Drive• 280 MSec access time • Kodak Photo CD access • Comptons multimedia 26 volume set and many more titles.

PC ACCESSORIES INC



3.5" BOX
HOLDS 80 DISKS!

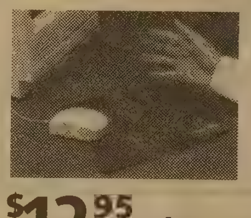
$4.99

ALLSOP

Dual Disk Drive Cleaner CK.-50

$8.95

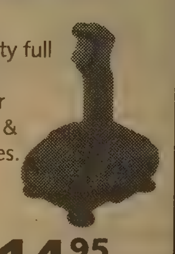
SILICON SPORTS Hyper Pad



$12.95 each

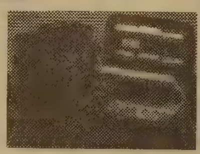
WINNER®

High quality full pistol grip joystick for IBM™ PC & compatibles.



$14.95

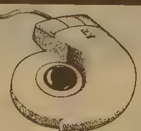
Notebook Case TARGUS



Designed for notte-book-style computers, fully padded computer section, reinforced handle & detachable strap.

$39

LOGITECH



Logitech TRACKMAN

Ergonomic, thumb-operated design takes advantage of the natural design of your hand. 100% Microsoft® compatible, includes MOUSEWARE® UTILITIES.

$89.

MicroComputer Accessories, Inc.
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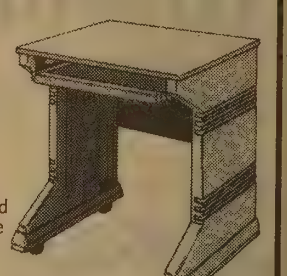

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ACER AMERICA

Competitive Strategies For The Global PC Marketplace

It's hardly news that the last few years have seen a colossal shakeout in the PC-compatible computer industry; even giants like Compaq and IBM itself have been forced to make drastic changes in their strategies and organizations to cope with short product cycles, commoditization, and shrinking profit margins; and other once-mighty players have fallen by the wayside.

A clear winner in the PC wars has been Acer America, the San Jose-based subsidiary of the Taiwanese giant The Acer Group. With sales of $301 million in 1992 (approximately 25% of The Acer Group's revenue for that period), Acer America is a significant presence in the US personal computer marketplace.

ACER AMERICA PRESIDENT RONALD CHWANG

The $301 million sales figure represents an increase of 50% over the previous year, in a period when, according to IDC, the industry as a whole grew only 10%. According to President/COO Ronald Chwang, this success is due to Acer's diverse strategy for dealing with market changes—for example, the recent introduction of a low-cost ACROS line aimed at the growing small business/home office market, a diverse dealer channel that includes everything from VARs and local dealers to J.C. Penney and the American Express catalog, and an innovative program of direct customer service and support across the product line. Another key

BY MARY EISENHART

factor is the transition to just-in-time manufacturing at its San Jose facility, which assembles most of the Acer products sold in the US and Canada.

Chwang, who came to Acer in 1986 after working in development and management at Intel and Bell Northern Research, most recently served as president of The Acer Group's Acer/Altos Systems business unit, where he led the development of integrated UNIX solutions and advanced technologies including Acer's Advanced RISC computers, based on the MIPS family of CPUs. He also oversaw the development of Acer's well-received AcerPAC multimedia platform.

We recently spoke with Chwang concerning Acer's strategies for prosperity in a changing and difficult marketplace.

How does Acer position itself in the PC marketplace?

Acer basically tries to differentiate itself from the rest of the suppliers in the PC industry in three areas: we are a long-term player; we have a very broad base of technology; and we're always looking at value/price/performance leadership.

Lately, in the US particularly, we've been very successful; also in creating new channels and expanding our business here.

Where does Acer America fit in The Acer Group?

Acer America is about $301 million, about 25% of the total revenue. This $301 million is mostly in our brand-name business; we also do OEM business, supplying systems to other people. Of our business, about 30% is OEM and 70% brand-name.

The US operation is a subsidiary of The Acer Group, and we market and distribute all the Acer products in the United States and Canada. In addition, we have a number of R&D projects going on here—one area, through the acquisition of Altos about two years ago, concentrated on UNIX integrated system development. The other area is in the Advanced Multimedia Project, which resulted in the introduction of integrated multimedia systems like the AcerPAC. Finally, we also do most of the RISC design over here in the US.

One very big difference between Acer and its competitors is that in the US we assemble basically all the products we ship in the United States. We produce between fifteen to twenty thousand units a month for the market.

The Acer Group has a very broad line of products other than computers. We sell chipsets for the PCs; we also go from components all the way to multiprocessor systems. We're a manufacturer of basic key modules, such as keyboards, printed circuit boards, and dynamic RAM. The DRAM is a joint venture with TI, currently producing over 1.5 million units per month. We do business in about seventy countries.

We put about 5% of our revenue into R&D; our R&D is done about one-third in the United States and two-thirds in Taiwan. When you consider that the cost of doing R&D in Taiwan is probably a little lower than it is in the US, it translates to the equivalent of 7–8% for a US company. We have a total of five thousand people, and over eight people are in areas related to product development. So it's a company with a very heavy R&D emphasis.

We are one of the major key component suppliers. In monitors, we produced over one million units last year; we're about the sixth-largest color manufacturer in the world. On the ASIC side, we supply chipsets, mainly for the market in Taiwan, for the motherboards. We have approximately a 35% market share for that. We also manufacture keyboards for many of the OEMs as well as for ourselves; we're in the top five worldwide. Starting this year, we also started to supply some of the motherboards to the market, in addition to just the systems.

BIOS is also an important technology. Most companies use BIOS supplied from other sources; we developed our own BIOS, and that allows us to sometimes do a few things a little differently from the other suppliers.

Most of our competitors are becoming either assembly houses or even distributors of PCs made by other companies. Acer has a commitment to the subassemblies and a lot of the products down to the component level. This allows us to keep good quality controls over those components, and it helps us to be in control of the cost structures.

We do about a third of our business in the US, about a third in Europe, and one-third in the rest of the world. When you consider the amount of business we do in the rest of the world, our position is very different. We are ranked #1 in market share in different countries. In Mexico, Acer has a 22% market share; we're #1 there, and in many South American countries. Also in the Far East, particularly in the Pacific area—Thailand, Taiwan, Malaysia, Indonesia, Singapore—and also in the Middle East. Those are the areas which had very large growth last year, while the rest of the world, particularly in Europe, did not have significant growth.

One of our differences from other companies is that we have a fairly balanced revenue structure, so we are not particularly subject to the economic fluctuations in one particular region. So we're a little more stable financially in terms of long-term survival.

One of the key achievements in 1992 is that we completed our ISO 9000 certification, in our manufacturing plants around the world. That includes Taiwan, Malaysia, and San Jose.

What does ISO certification mean?

ISO certification means that you go through a quality certification process to ensure that your manufacturing and your R&D have the right type of process and procedures; that you follow the same method of doing things, and maintain the same standards.

It's very important for doing business in Europe today, because many of the customers demand that products be supplied only from companies that have been certified. It's becoming a very important thing for US companies to do, to try to maintain their quality. Many companies in the Bay Area have gone through, or are doing, the same type of certification.

The manufacturing you do here is essentially assembling systems from components manufactured in Taiwan and Malaysia, so you can do relatively just-in-time manufacturing here?

Right. I think that's a key strategy and difference where we can actually prosper in this very difficult and low-margin business.

"We run about thirty-five or forty models of different systems today—it all comes out of two housings and two motherboards. The motherboards are all designed to be able to insert multiple frequency CPUs, so you very easily can switch production to the particular type that's in demand."

The traditional path in the past is that you build a very large factory, with automation, volume; you crank out PCs by thousands of units a day. The company, to be successful, traditionally required technology, channels, service, and support.

But because the PC infrastructure is so different from other industries—in particular, the product life cycle time is so short—in the '90s, logistics and distributed manufacturing become important.

When the margins on the PC are relatively reasonable, you probably will not pay too much attention to inventory costs. Imagine that you have to prepare materials and build the machine offshore, ship them by water to the United States. They sit in a warehouse; they go through the distributor; they go to the customer—this pipeline is about four to five months. The average costs of the components drops, let's say, 20% a year. In the four-to-five-month period, even before the product reaches your customer, your value of the goods has already been discounted by 4–5%. That's very significant when the margins become very tight.

Also, because the product life cycle is so short,

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you can't effectively introduce new products, because there are so many old products still in the pipeline.

The third problem is that the maturity of the market results in demand for customization. All the retail channels ask for slightly different packaging of their product, and you can't do that very effectively several thousand miles away. You have to do that in the marketplace.

Therefore about two years ago we reengineered our entire manufacturing idea. We said, "We're going to assemble in the most efficient manner, in the marketplace." And so we redesigned our products, and we restructured our manufacturing process, and as a result we come to assemble almost all the units in the market in the US today.

We ship large items, such as the housing and power supply, in bulk by sea, because their cost is relatively stable—plastic and metal do not change cost too much. We maintain a constant supply of those housings.

We airlift the motherboards into San Jose on a weekly basis. And finally, we ask Intel and our hardware suppliers to deliver the products to our door in San Jose. The idea is to build as fresh a product as possible, just in time with the latest cost, to the customer.

As a result, we've been able to reduce inventory significantly and shorten our lead time, so we've been able to introduce new products very quickly. We run about thirty-five or forty models of different systems today—it all comes out of two housings and two motherboards, and that's it. The motherboards are all designed to be able to insert multiple-frequency CPUs, so you can switch production to the particular type that's in demand very easily. That gives us configuration flexibility. We assemble them with the latest component costs, so we can remain competitive with pricing in the marketplace.

YOU'VE ALSO MADE SOME CHANGES IN YOUR DISTRIBUTION AND SUPPORT OPERATIONS RECENTLY.

I think much of our growth comes from the fact that we have two major channels. One is through the two-tier distributing channel, going to all the resellers. In the fourth quarter this was very strong, partly, I think, because a number of suppliers have dropped from the market. The resellers started to consolidate into a few of the remaining ones, and our business had a significant increase from that.

We entered the retail channel, what you call the mass merchandise channel, about eighteen months ago, and had significant growth in the fourth quarter. In the retail channel today, we are probably present in every aspect, from computer superstores such as CompUSA to consumer electronics stores such as Circuit City and BestBuy, even department stores, such as WalMart, and some of the specialized catalog stores, such as J. C. Penney and American Express. It's a very broad spectrum of the retail channel, and during the fourth quarter, that channel had a significant unit increase, I think due to home-office users.

We traditionally rely on dealers and resellers to do our service and support. But in the fourth quarter, from both market needs and the increasing competitiveness in the service area, we changed to direct service of our end-users, with direct hotline support and on-site service. That was a significant change; we basically had to restructure our service organization to take up that task.

YOU SELL A WIDE VARIETY OF SYSTEMS, FROM LOW-END PCs TO MULTIPROCESSOR SERVERS. HOW ARE THESE POSITIONED?

The entry line is the Acer ACROS; the midrange is the Acer Power, the EISA-based workstations. The AcerPAC is the multimedia Personal Activity Center. And then we have the notebooks.

On the other side are all the server types of product, and it goes all the way to multiprocessor machines. Altos takes some of this hardware and integrates it with the Altos version of SCO UNIX, and creates a number of integrated systems. And then finally we utilize some of the networking tools to link all these servers and the desktop together to become a client/server environment, and then the application sits on top of that.

WHAT TRENDS DO YOU SEE FOR THE PC INDUSTRY IN 1993 AND BEYOND?

I think prices will probably continue to drop, but it probably will be at a little slower rate—over the year, probably at least 20%, but mostly that will reflect material cost changes. We just had a round of price reductions by various companies in the last few weeks—I think it's mainly reflecting component cost reductions.

One phenomenon is that absolute prices don't drop—I don't see the cheapest computer sold in our class of supplier dropping below, say, $800–$1000. Rather, more features are being pushed down into the lower price bracket. In other words, you will be able to buy either a bigger hard disk, or more memory, or a faster processor. Most of the product is focused, and the volume happens to be, in the $1000–$1500 range.

We've been selling 486 completely since, I'd say, fourth quarter, and sometime, maybe in the second quarter, I see that even our notebooks will switch completely to 486.

DO YOU SEE ADOPTING PENTIUM ANY TIME SOON? HAVE YOU ANNOUNCED ANY PLANS FOR THAT?

We do have products which are developed around the Pentium, but this year, I think, because the total unit supply of Pentium in the second half will be fairly small, I don't think it will be a major portion of the business.

In the second half of the year, I think Windows NT will become an important operating system to drive some of the product sales, and some of the shakeout and consolidation will still continue.

SPEAKING OF NT, WHAT IMPACT DO YOU EXPECT IT TO HAVE ON YOUR UNIX BUSINESS?

I look at the business this way. I think UNIX will continue to have its position and market share come mainly when you try to bring the high-end application from the mainframe downward. On the other side, I think NT will definitely win the consolidation of the desktop world. In other words, if you look at any enterprise where there's a number of PCs running Windows, the NT will become the server behind those things. If you have an organization that started with only a PC, and let's say some Novell LAN networks, over time that kind of environment might migrate onto NT. It's more bottom-up.

Eventually, companies will make their own decisions, but in many cases, I think, they will end up with a UNIX server and an NT server coexisting as an application server behind the front end, the client.

NT has a number of embedded UNIX capabilities, so it's very easy to operate our network with both an NT server and a UNIX server.

NT runs LAN Manager; but LAN Manager has this protocol called TCP/IP which most UNIX systems use to transfer files. So you can actually put a UNIX server and an NT server on the same Ethernet. The user on the front end can run a Windows application, whether it's under NT or just Windows 3.x; you can launch an application automatically by calling up the Windows NT server to run the application.

On the other hand, the UNIX front end can now be adapted into the Windows world also, there's a lot of tools for that. You can take a UNIX application, and all you do is double-click on an icon. The UNIX application will be called into the front end and run. The user probably does not know whether that's being run on the UNIX server or the NT server.

> "Absolute prices don't drop—I don't see the cheapest computer sold in our class of supplier dropping below, say, $800–$1000. Rather, more features are being pushed down into the lower price bracket. In other words, you will be able to buy either a bigger hard disk, or more memory, or a faster processor."

The user only cares about the graphic user interface and applications he's running; he has less concern with whether the server behind it is running the NT operating system or the UNIX operating system.

COULD YOU TALK A LITTLE BIT ABOUT YOUR MULTIPROCESSOR MACHINES? FOR INSTANCE, ARE THEY MIPS OR INTEL? MR. SHIH [CHAIRMAN OF THE ACER GROUP] MENTIONED LAST YEAR HAVING A MULTIPROCESSOR MIPS MACHINE RUNNING NT.

Right now we have a prototype of the ARC machine, which is a system developed as part of the ACE initiative. But that was designed mainly as a prototype for some of the ISVs to develop their applications.

We have NT running on the Intel multiprocessor platform, and that's one of the systems of NT server we'll be introducing when NT starts to ship in May or June.

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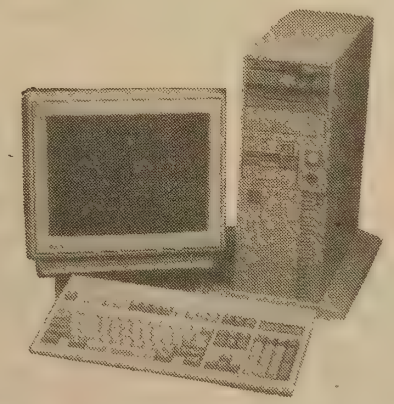

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Today, all our systems are based on the Intel processor. At the highest end is a 486 50MHz multiprocessor system. It probably has one of the highest performance rates in terms of scaling the processor power.

Altos, by integrating the UNIX features on top of this multiprocessor system, was able to have a very good acceptance of the high-end systems going into critical business application areas.

Could you explain a little about the features and positioning of your multimedia line?

In spring 1992 we introduced our first line of multimedia products. We look at multimedia as a platform, as opposed to an end in itself. We've utilized the audio standards, and the MPC and Multimedia Windows capability. We build into the system capabilities such as telephones and digital answering machines, fax, on top of the CD-ROM and sound capabilities. The result is an integrated system where you can use it to play all the multimedia packages, the entertainment aspect of multimedia; or you can use it as a more effective communications computing tool. You can develop a number of applications where you combine the communications capabilities, such as answering machines, together with your PC.

You actually can power down the system, and when the phone rings, the system will wake itself up and answer it in four rings, whether it's a fax or a telephone call. If it's a fax, the system receives the fax and stores it on the hard disk. If it's a telephone call, it starts the answering machine inside, using the multimedia capability, and stores the voice message. Then the computer can go back to sleep.

We will continue on this line of development this year. Probably in the second half of this year, more and more of our systems will be incorporated with these types of features.

What customers do you see being particularly interested in these features?

Initially, it's still the individual users and the home office people. One of the problems of multimedia, when you deal with sound or voicemail in the business world, is that you have to figure out a way to tie the system in to the digital phone system world, such as the PBX.

Secondly, there are a lot of issues to deal with—what is the function of PBX or voicemail systems versus networked PCs with telephone links to the outside world? When you merge the communication and the computing worlds, there are still a lot of standards and incompatibilities that have to be resolved. In the business world, let's say you had one of those machines; if your coworker doesn't have that capability, it's still a very restricted use for an individual.

So I think it will take some time for all the multimedia capabilities, particularly the audio/video information transformation, to populate throughout the business world, until some of the standards problems are resolved, and until a significant number of users have that capability in their systems.

Kind of like the videophone not being useful unless the person on the other end has one too.

> "I think UNIX will continue to have its position and market share come mainly when you try to bring the high-end application from the mainframe downward. On the other side, I think NT will win the consolidation of the desktop world."

Exactly. So I think the market will continue to develop. Some systems will be sold as an integrated system, with all these capabilities together; on the other side, the add-on market will probably continue to enjoy very hefty growth. At some point, when a significant number of systems have those capabilities, then we'll see a number of new applications being deployed in the business world. ■

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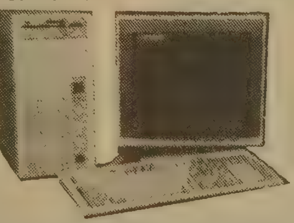

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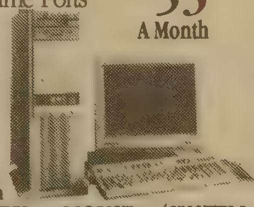

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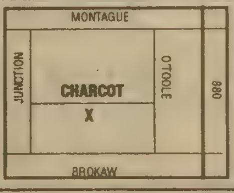

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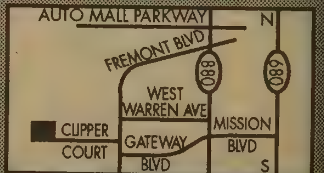

High-End DTP Packages For Windows

Quark, FrameMaker, Ventura—And Waiting In The Wings, PageMaker 5

BY RICH GRACE

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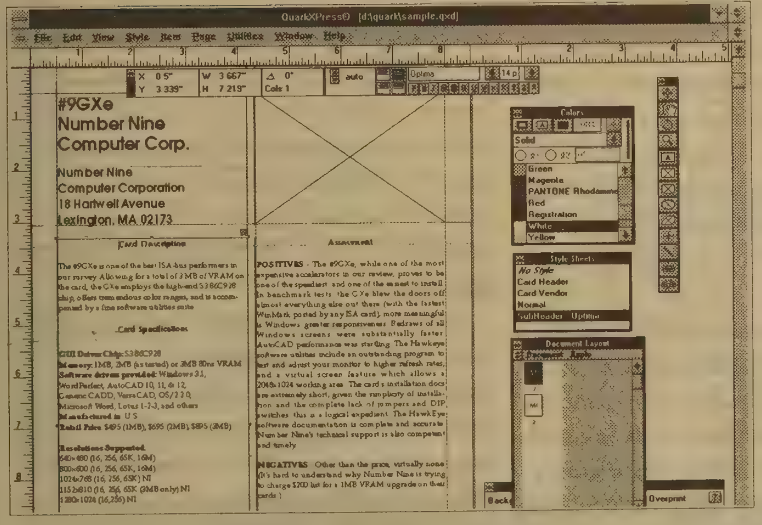
With the release of Quark XPress for Windows last year, Windows users have begun to enjoy the same range of powerful options long known to Macintosh users. What follows is an overview of the leading contenders.

Quark XPress for Windows

For years, PageMaker and Ventura Publisher have dominated the PC desktop publishing software market. Both programs are worthy and powerful packages. Unfortunately for PC users, the Macintosh desktop has always been viewed—justly—as the preeminent microcomputer publishing platform.

That's primarily because of the reputation of Quark XPress. Quark is one of those programs that established the Macintosh. It's acquired a devoted (not to say fanatical) following, for whom nothing else will suffice. Most service bureaus rely on Quark for their painstaking page layout tasks.



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Assessment

With the advent of Windows 3.x, the PC finally acquired a reasonable GUI, and major vendors—Quark Inc. and Frame Technologies—began porting their flagship products to the laggard PC platform. FrameMaker was out first, in mid-'92, and immediately positioned itself as the direct competitor to Ventura in the long-document, technical writing and composition end of the publishing market. Quark for Windows was finally released in December '92, but only to a select few distribution houses in what can only be described as an idiosyncratic marketing ploy. After two weeks assessing Quark for Windows 3.1, I feel safe in calling it a welcome addition to this competitive field.

THE CONTROL PALETTE AND THE TOOLBOX

Quark supports the Multiple Document Interface (MDI), which means that several Quark layout files can be open at once for your work. The Quark screen is comprised of one or more document windows, and several floating windows and palettes.

One of the key facets of Quark's user interface is the floating Control palette, which changes its tools and characteristics as you work with different elements of a document—pictures, text, and graphics drawn in Quark, such as lines and circles. Once you get used to the floating palette changing its features every time you click on another element of your document, it rapidly becomes a handy and speedy tool, encompassing many of the program's key features and saving tedious voyages through menu levels. (A control palette is also supported by the upcoming PageMaker 5.0, which, since it's still in beta, isn't available for review in this issue.)

The layout screen of Quark XPress can get a little crowded; it's possible to have as many as six palette windows open along with your document (see illustration). Because of this, Quark defaults to a single-page view, which you scroll through to subsequent pages. Personally, I've grown very accustomed to having the several palettes open, because of the rapid access to tools and features that results.

Another nice feature which has been transported from the Mac is the practice of selecting varying amounts of text with an appropriate number of mouse clicks. Four mouse clicks will select an entire paragraph, and three will select a sentence, for example. There's also an Application Preferences menu option, which allows you to make adjustments to the program's performance—you can adjust the DPI (dots per inch) on the screen, which also amounts to increasing the Zoom factor on your default page views. If your text is too small to read comfortably in your preferred view, adjust this option.

At first, I simply thought Quark was too slow in its screen updates, even with a 486-33 and one of the fastest Windows accelerators on the market; adjusting the scrolling speed (another option offered in Application Preferences) renders it much more acceptable for impatient users like myself.

To build a Quark layout, you draw text and picture boxes on a blank page. As with other major programs, you can place blank elements on a master page, or such things as header and footer text, for a consistent layout from page to page. If you place text boxes on a master page, those boxes will appear on every subsequent document page attached to that master, and can be moved or adjusted or resized on any of those document pages *without affecting the master.* Also note that Quark allows the use of multiple master pages in the same document—allowing for, as an example, complex newsletter and newspaper designs which traditionally change page formats between sections.

While placing boxes as an intermediate step to text or graphics layout adds a step which PageMaker doesn't require, the flexible "boxes" metaphor has significant advantages over PM's "Pasteboard" system. For example, once you place an item on a PageMaker master page, it is locked in place and cannot be moved. Further, the lack of text boxes in PageMaker, while speeding up some layout processes, also implies a certain imprecision in layouts requiring fine tolerances. Quark's text and picture boxes, on the other hand, can be resized either with the mouse or in a dialog box, the latter within one-thousandth of a measuring unit. This level of precision has earned Quark a devoted following.

Picture boxes, by the way, can be shaped in various fashions, with rounded corners, ovals, and user-drawn polygons to reflect any shape of a picture. Picture boxes are also scrollable. In other words, a picture in a box can be moved with the mouse to any offset position—to crop or cut off a segment of a picture which you may not want displayed. Pictures (like the boxes in which they're contained) are also resizable, by mouse or by specific percentages. Text and picture boxes can also be rotated by 360 degrees around the circle, and box backgrounds can have colors applied to them.

QUARK AND OLE

Object Linking and Embedding is one of Windows' most popular and powerful facilities. It enables users to combine numerous types of data into one document, and to have instant access to any of the applications that originally created that data—without the tedious starting and restarting of programs, and repetitive cutting and pasting of data into the Windows clipboard. Quark for Windows takes full advantage of OLE as a client application (a program which can receive embedded or linked objects from other programs, but cannot send objects to them), and thus interacts with other major applications in subtle ways.

For example, in the layout I created for the illustrations accompanying this article, several graphs have been placed into the Quark document. When the right tool in the Quark Toolbox (in this case, the Content tool) is selected and one of the graphs in a Quark picture box is double-clicked, the program that originally created the graph (Microsoft Excel, in this case) will appear, displaying the graph and ready for editing. This is called editing an Embedded object. Any embedded object (such as a sound waveform, an Excel chart, a picture in Corel Draw, or a Word for Windows text file), when double-clicked in Quark, will activate the application that originally created it. When you're finished modifying your object, simply choose Update from the File menu of the app, and your Quark document will show the changes you've made.

All the graphs you see in the accompanying illustration are embedded objects. Furthermore, you can transfer your Quark file with all the embedded objects to another computer, without having to bring all your object files with you—they're already present in your Quark layout file.

On the other hand, Excel (or other programs) do *not* appear when attempting a Linked object edit from within Quark. Linking an object in OLE means that you can have a copy of any picture or other things in multiple documents—say, a specific Excel chart in five or six different Quark files—and if you modify that chart *from within Excel*, all your Quark files will automatically be updated. However, you cannot double-click on a paste-linked object in Quark and expect your original app to appear. It doesn't work that way.

In any case, Quark's implementation as an OLE client is fine and a valuable asset for publishing work.

TYPE HANDLING

One of Quark's longtime strengths is its powerful type handling. In the new Windows version, desktop publishers have a remarkable array of type modification features available with a mouse click—including Superscripting, Subscripting, "Superior" text (in which selected text is superscripted with a smaller point size), outlining and shadowing of text, strikethroughs and underlining, and the more prosaic bolding, italics, and large and small caps. All these features are available on Quark's Control palette as a button bar. You can also change typefaces and make text tracking adjustments here.

Tracking, used over a range of selected text, is one of the precision type-handling features for which Quark has long been renowned; while PageMaker only allows you to change tracking specifications by set amounts, Quark allows you to specify as little as 1/200th of an em space and up to –500th or + 500th (a total range of five em spaces) for your letter spacing over a sentence, paragraph, or column. Negative values bring letters closer together, while positive values spread them apart. Extensive pair kerning is also supported, and can be adjusted in your actual PostScript fonts by editing the actual Kerning Tables for each typeface.

A feature common to other high-end packages which Quark also employs is that of Style Sheets. In Quark, style creation works much as it does in other programs, with existing styles or new ones created or modified in a dialog box. It's a real time-saving device which any serious publisher needs to master for time-intensive work.

QUARK AND COLOR

Quark's spot color features match PageMaker's, with complete support for the Pantone Matching System, CMYK (cyan, magenta, yellow, black) color mixing, and RGB color mixing. Any of these colors can be applied in the standard ways—to drawn lines, to box backgrounds, and other objects drawn directly on Quark's screen. Quark provides a color palette window which allows quick access to document-installed colors with a mouse click.

Color Trapping is another of Quark's professional-level features. Trapping is used for color separation, and is vital when you have text or pictures superimposed on color backgrounds. You can specify precise tolerances in which colors on a graphic can "surround" your object, and prevent color bleeding or overruns in a separation.

While a short review can't do full justice to Quark's features and flexibility, it's clear that Aldus has plenty to be worried about. While PageMaker continues to be delayed in its 5.0 release (which, it must be noted, will match Quark in many of the features discussed here), Quark has produced a solid, and in many ways *fun*, high-end publishing program.

Are there weaknesses? Only a few, but they're serious. One of the biggest problems is Quark's poor support for PCL printers—printing is very slow, and often drops characters from a layout! Quark for Windows also fails to move files successfully to the Mac version (though the reverse does work). This is a major problem in service bureau work.

I'd like to be able to drag-and-drop Quark files into a Program Manager group for automatic opening. I also can't understand why Quark couldn't include Box and Circle drawing tools. Other than that, for layout tasks, Quark is solid as a rock.

FrameMaker 3.0 For Windows

Beyond a doubt, FrameMaker has the most user-resistant interface of any program in its class. The Windows version is a direct import from every other version of the program in existence—many UNIX platforms and the Macintosh.

But despite the significant difficulties new users may have in embracing this program, FrameMaker achieves a nearly impossible task—enforcing consistency and uniformity across a huge range of computer platforms. I have successfully transferred a FrameMaker layout file (see illustration) from both the Windows and Mac verions of FrameMaker to a version running on a Sun workstation! Assuming you have similar fonts on all platforms, inter-platform operability is a reality with FrameMaker—more so than with any other program I'm aware of.

continued on page 258

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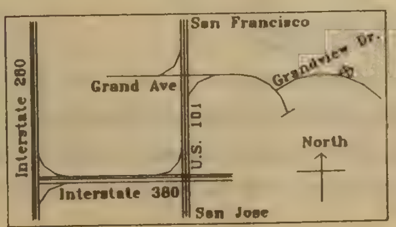

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Windows Accelerator Cards

BY RICH GRACE

RESOURCES:

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STB Systems, Inc.
(214)234-8750

Legend GX, $329
Sigma Designs, Inc.
(510)770-0100

Fahrenheit VA, $299
Orchid Technology, Inc.
(510)683-0300

It is not news that Windows has introduced some major changes in both the PC hardware and software areas. By the end of '92, for example, Windows software was poised for the first time ever to outsell DOS software, dollar for dollar. In the hardware arena, many owners of VGA displays have been disappointed running Windows even on a fast computer, because Windows adds lots of graphics overhead on any system.

When I visited Fall Comdex '92, I was struck by the sheer number of video cards that are tailored specially for Windows users. There are currently over two hundred video cards available or soon to be on the market. Windows accelerator cards are sometimes called video coprocessors because they take the Windows graphics drawing load off the main CPU (a 286, 386, or 486) of the computer, freeing it for other tasks. (Standard VGA cards are called frame buffer video cards, because their sole function is to receive bit-mapped data from the microprocessor as a buffer and send it to the computer screen.)

The key feature enabling Windows accelerators to perform their work is a special on-board chip, of which there are several competing designs. Companies offering special accelerator chips include S3 (currently the most popular), Weitek, IIT, Western Digital, Cirrus Logic, Tseng Labs, and ATI Technologies. They all work by transferring many of Windows' graphics drawing and text scrolling routines to hardware, thereby speeding up screen displays. Some chips, of course, are more effective than others. Windows accelerators also rely on special software drivers provided by the card manufacturer to activate the higher performance of their cards.

The first generation of Windows video cards began to hit the market two years ago. They were few and far between, and were generally too expensive for the average user. The offerings we're evaluating here, from Sigma Designs, STB Inc., Orchid Technologies, and Paradise (Western Digital), are all part of a second, faster and cheaper generation of cards, of which Windows users can take advantage for faster Windows displays. All of the offerings here list for $329 or less.

WHO'S ON THE BUS?

All the cards we're looking at are based on the 16-bit ISA bus design. Another prominent event this fall was the explosion of VESA Local Bus (VLB) products, both system motherboards and video cards, which promise even greater boosts in Windows throughput. Most of the cards in this review have VLB counterparts for a small price markup. I hope to deal with some VESA Local Bus products in a future issue.

Between the onslaught of inexpensive Windows cards and the sudden emergence of the VLB standard, it seems certain that the basic VGA frame buffer design is dying fast. Anyone with serious graphics needs—even as simple as creating 3-D graphs on a spreadsheet—will need faster video than the basic VGA design can provide, particularly under the Windows environment. It must be noted, however, that most Windows accelerators paradoxically speed up Windows at the expense of DOS performance! This is especially true for S3-based cards. Buyers should be aware of this when they decide on their purchase.

TEST SYSTEM

The test system used for evaluation is a 486-33 with 8MB of RAM, a 200MB hard disk, and two monitors: a Seiko CM1440 14" multisync, and a MAG Innovision 17" monitor supporting 1280 x 1024 resolution. All hardware is plain vanilla and industry standard. For the most part, the cards we'll be looking at are based on the S3 processor family. S3 Corp. manufactures several chips designed for inexpensive Windows acceleration. Sigma, STB, and Orchid all bear one or another of S3's line of chips. As we review each card, we'll go into more detail about the silicon. The sole exception is Western Digital's Paradise Accelerator for Windows, which bears the proprietary WD90C31 chip.

WINDOWS VIDEO CARDS

The Powergraph X-24

The Powergraph X-24 is a high-speed VGA card, designed for users who want a faster Windows screen. Using 1MB of 60ns DRAM, the Powergraph is based on the S3 86C801 accelerator chip, known as a fast and inexpensive offering of S3's line. Despite the card's low cost, the X-24 delivers an excellent value. The Windows video drivers provided with the card are not simply optimized to show good Windows video speed scores on standard benchmark programs—they actually enhance the performance of applications in Windows. In particular, text scrolling in word processing applications such as Word for Windows is very speedy, and graphics programs such as Aldus Freehand and Micrografx Designer perform screen redraws very efficiently. Based on my tests, the Powergraph X-24 is nearly five

continued

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Rich Grace is a free-lance and technical writer, and an enthusiastic user of PC, Mac, and Amiga platforms. He lives in Orange County. He can be reached on MCI Mail ID 484-6217.

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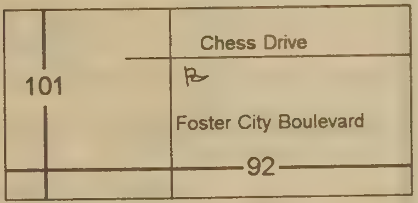

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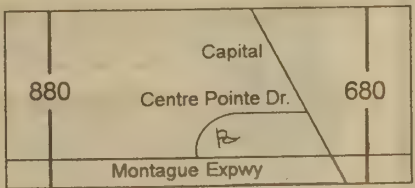

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It must be noted that most Windows accelerators paradoxically speed up Windows at the expense of DOS performance!...Buyers should be aware of this when they decide on their purchase.

times faster than the Diamond Stealth card, which was one of the fastest and most popular of first-generation Windows accelerators. When you install the Powergraph on a 386 or higher computer you'll immediately notice the improvement in performance. The Powergraph's documentation is thorough.

Some negatives: The Powergraph has three hardware jumpers which must be set for optimal operation. Some problems were also experienced with a few software drivers. In particular, the Microsoft Word for DOS driver failed completely on Microsoft Word 5.5, and several Windows 3.1 drivers initially reset my Seiko test monitor (but worked properly on the MAG Innovision). Overall, I enjoyed trouble-free operation. The 1024 x 768 and 1280 x 1024 pixel drivers, in particular, are sharp, fast, and appealing. For cash-strapped users wanting a Windows accelerator, the Powergraph X24 card provides an outstanding value.

SIGMA DESIGNS LEGEND GX

The Sigma Legend GX is a video card of fine workmanship and clean design. The hardware is virtually flawless, with no dip switches or jumpers to set. The card uses another S3 chip, the 86C924 (which is essentially a plug-in replacement for the older 86C911, the chip used by the Diamond Stealth, among many others). The GX relies on 1MB of video RAM (VRAM is a faster but more expensive alternative to DRAM, which is used on most of the cards reviewed here) for its image storage, and supports up to 32,768 colors in 640 x 480 VGA resolution. As with the other cards in this review, the Legend GX supports super high-resolution screens of up to 1280 x 1024 pixels for high-detail professional work (of course, you must have a monitor that supports such a high resolution). The documentation is complete, the software drivers for Windows and other applications install and work flawlessly, and the overall quality of the package is excellent.

Unfortunately, the Legend GX card's performance is mediocre, and though in all respects it is much faster in Windows than any frame-buffer VGA card, it suffers in comparison to other cards in this review. The Legend GX falls below the middle of the performance range, with the STB Powergraph X-24 and Fahrenheit VA (reviewed below) outperforming the Legend GX in most tests. In fact, the Legend GX is surprisingly slow in overall performance benchmarks compared to much of the competition. This is possibly temporary, as Sigma will likely be releasing Windows software drivers which may be faster than the current set. Most users will probably not notice the difference. The Legend GX is a well-designed, high-quality package, and wonderfully easy to install and use, particularly for users just getting their first accelerator card. Demanding users wanting every ounce of performance may want something else, though.

ORCHID'S FAHRENHEIT VA

The Fahrenheit VA is Orchid's second-generation successor to its popular Fahrenheit 1280 Windows accelerator. Relying on 1MB of standard DRAM and the S3 86C801 graphics chip, the VA offers high-speed Windows screen updates at up to 1280 x 960 resolution, plus a small microphone for voice annotation of Windows files. However, the Fahrenheit VA card does not share ease-of-setup qualities with the Sigma Graphics card. One problem is the VA's manual setup for screen refresh rates. Refresh rates determine whether or not a screen flickers (also called interlacing), or has a rock-steady image, at resolutions higher than VGA. In other words, the higher a rate is, the easier it is to look at a screen. Unfortunately, four switches on the back of this card (plus several jumpers which must be set for best operation) may create some difficulty for many users who just want to get up and running. (This is not unusual, however. Many Windows accelerators, including

continued on page 270

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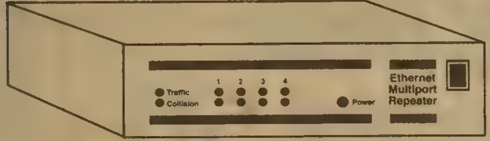

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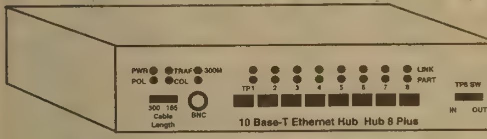

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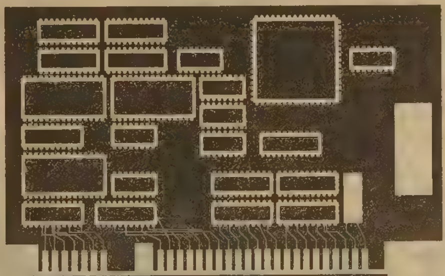

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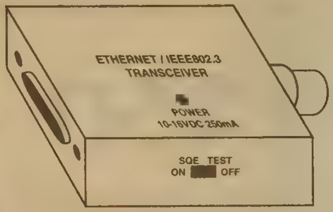

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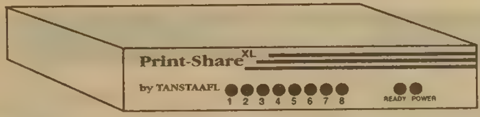

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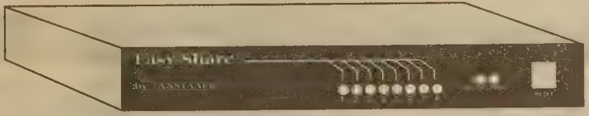

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1x8-70 2 Chip	30
1x8-80/70 8 Chip	32/33
2x8-80/70	63/66
4x8-80/70	CALL
16x8-80/70	CALL
Mac IIfx 4/16 MB Kit	135/490
256K VRAM	22
512K VRAM	58
16/32/64/128MB Kits for Quadra 700/900 & Mac IIfx, ci	CALL
NEW 72 PIN SIMM for MAC LCII & CENTRIS	CALL

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512Kx36-70	84
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32 BIT SIMMS ALSO AVAILABLE

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DRAMS

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256x4-70/80	4.25
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1x4-80	17
1MBx1-70	4.40
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256x4 Video 28pin	14
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1x4-80/70 page 20pin	CALL

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32Kx8-15	9
64x4-20	8.50
64x4-15	13.75
8Kx4-20	3.75
8Kx8-15	4.75
16Kx4-20	3.75
16Kx4-15	4.50
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64x1-15	7.50
128x8-100	CALL
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387SX-25 Cyrix	69
387SX-33 ULSI	79
387DX-20 Intel	54
387DX-25 Intel	67
387DX-33 Intel	77
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7000-2/3 MB	125/159
Action LaserII-2/3/4/5 MB	108/139/169/199

HP LASER

HPII/IID 2/4 MB Board	$105/169
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HP IIP,IIP+,III,IIID,IIIP 1/2/3/4	60/95/134/159
IIsi 4/8 MB	138/264
LaserJet Fax 1 MB	82
DeskJet 500/500c 550C 256K	52
Design Jet Plotter 4 MB	144

PANASONIC LASER

KXP4410/KXP4430 1/2/3/4 MB	$89/115/149/184
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KXP4450 1 MB	111
KXP4455 2 MB	129

OKI LASER

OL400 1/2 MB Board	$84/106
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OL810 2/3/4 MB Board	145/179/219

QMS LASER

PS 410 2/3/4 MB	$119/165/189
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PS 815, 825, 815MR, 2/4/6	168/232/295

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Brother HL-8E V 1/2 MB	99/139
Compaq Pagemarq 15 & 20 1/4/8	49/139/266
Fujitsu RX7100/7200 1/2 MB	185/245
Kyocera F800, F800Am F800T 2/4	95/137
NEC Silentwriter 90/290	99/124
NEC Silentwriter 95 2 MB	104
TI Microlaser 1 MB	55

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	4 MB	310-2507	155
433TE, 425TE & Powerline Workstation	2 MB	310-2466	109
	4 MB	310-2467	175
	8 MB	310-2468	319
	16 MB	310-2469	649
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	4 MB	129769-002	155
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	4 MB	112534-001	169
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Deskpro 386/20,20e,25e	4 MB	113132-001	169
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	8 MB	141685-001	299
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T4400SX, SXC, T6400	2/4 MB	135/219
	8/16 MB	157/249
T3300SL	1/2 MB	99/129
T3100	2 MB	109
T2200SX, SXE, T1000LE	2/4/8MB	105/157/279
T1800 Satelite	2/4/8 MB	109/159/279

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Prospeed 286, 386SX/16	1/2/4 MB	$99/165/229
Prospeed 386	2/4 MB	165/419
Prospeed SX/20	1/4 MB	105/229
Powermate 386/25S	2/8MB	129/359
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DELL NL25, NL20	2 MB	179
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Sharp 678/6881	2 MB	129
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TI Travelmate 3000	2 MB	69
TI Travelmate 4000	4 MB	219
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486 Valuepoint	4/16 MB	169/595
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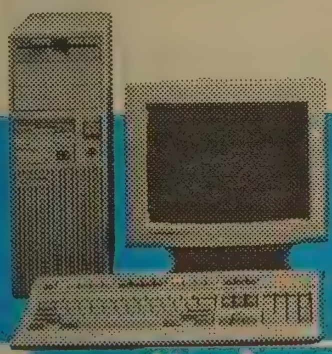

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Viewsonic 7	950
Viewsonic 8	1510
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386SX-33MHz	120
386-33MHz 64K Cache	180
386-40MHz 64K Cache	185
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486-33MHz w/64K Cache	420
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Printers

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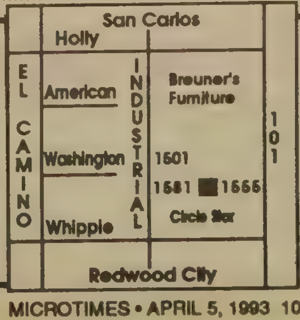

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213mb (IDE) Maxtor 2213AT	294
240mb/16ms (IDE) Maxtor	317
240mb/15ms (IDE) Quantum LPS240	345
240mb/15ms SCSI Quantum LPS240S	385
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MEDIAVISION ProAudio Spectrum	184
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NEC 3FGX/ 4FG	605/710
NEC 5FG OEM/Original	1,286/1,385
MAG 15F (1280x1024,0.28)	546
MAG 17F (1280x1024,0.26)	1,026
SONY CPD 1304s/1430	529/584
SONY CPD 1604s (17",1024x768,0.25)	939
HITACHI CM-2085(20")/2187 (21")	,249/2,149
Super VGA (1024x768) monitor 0.28	241
Super VGA Non-interlaced Monitor 0.28	266
Viewsonic 4E/5E/5+	275/374/476
Viewsonic 6E/6FS/15	315/525/634
Viewsonic 7/8	947/1,504

CONTROLLER CARDS

IDE 2FD/2HD	$14
IDE 4FD/2HD	35
IDE cache controller (promise)	110
VESA Localbus IDE	54
IO with 2s/1p/1g	12
Monochrome card	12
Adaptec SCSI 1522/1542B	98/228
Adaptec 1542BK+/1742EISA	305/405
TECO VESA IDE Cache	240

KEYBOARDS

101 Enhanced keyboard	$21
Maxiswitch	31
Keytronics	36
Focus 2001/5001	38/55
Omnikey 102/Ultra	66/89

MISCELLANEOUS

Internal Modem 2400 Baud	$30
Fax Modem (9600 F, 2400 M)/Window	50/57
Fax Modem (14400 F, 14400 M)	175
3-Button mouse	11
Microsoft mouse	60
Logitech Mouseman serial (4000dpi)	60
Logitech Mouseman Bus (4000dpi)	60
Colorado Tape backup DJ-10 120M	165
Colorado Tape backup DJ-20 250M	209
Colorado Trakker 250MB	394
IOMEGA 250MB Tapebackup	260
Baby AT/Mini Tower case w/230W PS	57
Medium Tower case 2/230W PS	90
Full Tower case w/230W PS	100
Microsoft DOS 5.0/Windows 3.1	45/45

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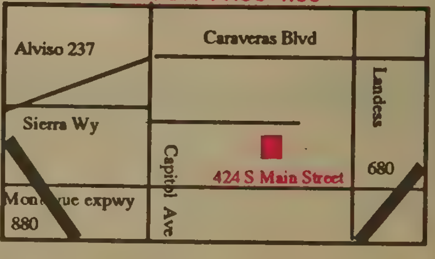

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486DX2-50	$1499
486DX-33	$1389

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- •AMI BIOS
- •4 MB RAM 70ns
- •VESA IDE Controller
- •2 Serial/1 Parallel/1 Game
- •1.2 MB & 1.44 MB FDD
- •120 MB IDE Hard Drive
- •101 Enhanced Keyboard
- •14" 1024x768 .28dp SVGA
- •1 MB VESA SVGA 1280x1024 16M Colors w/Accelerator
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- •200W Power Supply

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- •AMI BIOS
- •4 MB RAM 70ns
- •IDE Controller
- •2 Serial/1 Parallel/1 Game
- •1.2 MB and 1.44 MB FDD
- •120 MB IDE Hard Drive
- •101 Enhanced Keyboard
- •14" 1024x768 .28dp SVGA
- •512K SVGA Card
- •Mini-Tower or Desktop Case
- •200W Power Supply

OPTIONS

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- •Add $20 for 1 MB SVGA Card
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- •101 Enhanced Keyboard
- •14" 1024x768 .28dp SVGA
- •512K SVGA Card
- •Mini-Tower or Desktop Case
- •200W Power Supply

OPTIONS

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IDE 2FD/2 HD w/ 2S/1P/1G	24
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Adaptec ESDI 1542KB w/kit (ISA)	274
Bustek SCSI/EISA	389

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Panasonic KX-P1124i	284
Panasonic KX-P1624	358
Cable for Printer	3

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VGA 512K (1024x768,16 bit)	42
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Orchid ProDesigner IIs w/Hi-Color	143
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Nanao 9080i (16", 1280x1024, 0.28)	1028
NEC 3FGX (15", 1024x768, 0.28)	645
NEC 4FG (15", 1024x768, 0.28)	798
NEC 4DS (16", 1024x768, 0.28)	978
NEC 5FG (17", 1280x1024, 0.31)	1338
Sony CPD 1304 (14", 1024x768, 0.25)	579
Standard VGA (640x480) 0.51	189
Super VGA (1024x768) .39	219
Super VGA (1024x768) 0.28	258
Super VGA (1024x768,0.28) Non-Int.	279
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486DX-33 MHz/64K EISA	663*
486DX-50 MHz/64K ISA	575
486DX-33 MHz/64K ISA	425
486SX-20 MHz	189
386DX-40 MHz/64K.	165
386SX-33 MHz	98

MISCELLANEOUS

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FaxModem (9600 fax 2400 modem)	63
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Logitech Mouseman Serial (400dpi)	65
Logitech Mouseman Bus (400dpi)	72
Summit/Colorado Tape Back-Up	189
Baby AT/Mini Tower Case w/200W PS	59
Medium Tower Case w/200W PS.	85
Full Tower Case w/230W PS.	105
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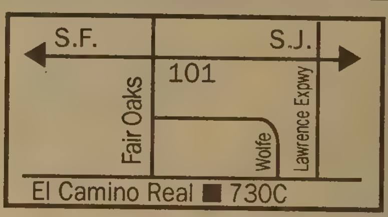

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- 80486DX50/DX2-66 MHz CPU
- 256K Cache Up to 512K
- 1 MB RAM Up to 256 MB
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- 80486DX50/DX2-66 MHz CPU
- 256K Cache
- 1 MB RAM Up to 64 MB
- 2S/1P/1G Ports
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MAG MX17F,1280x1024 NI, 72 Hz, 0.28mm, 17"	1080
NANAO F550i, 1024x768 NI, 72 Hz, 0.28mm, 17"	1080
NANAO F560i, 1280x1024 NI, Trinitron, 0.26mm, 17"	1590
NANAO F750i, 1024x768 NI, 72 Hz, 0.31mm, 21mm, 21"	2050
HITACHI CM2085, 1280x1024 NI, 72 Hz, 0.31mm, 20"	1400
HITACHI CM2187, 1600x1280 NI, 72 Hz, 0.31mm, 21"	2195
SONY CPD1304S, 1024x768 NI, 60 Hz, 0.26mm, 14"	575
SONY CPD1430, 1024x768 NI, 60 Hz, 0.26mm, 14"	595
SONY CPD1604S, 1024x768 NI, 70 Hz, 0.26mm, 17"	1050
SONY GDM1936, 1280x1024 NI, 70Hz Trinitron 20"	2095
SEIKO 1450,1024x768 NI, Trinitron, 14"	495
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DIAMOND Speedstar 24X, 1 MB	175
DIAMOND Stealth 24 ISA S-3 801, 1 MB	169
DIAMOND Stealth 24 VLB S-3 805, 1 MB	185
DIAMOND Stealth Viper VLB (Weitek 9000) 1/2 MB	385/485
#9GXE S-3 928 Accel, 1 MB VRAM, Level 10	399
#9GXE S-3 928 Accel, 2 MB VRAM, Level 11	585
#9GXE S-3 928 Accel, 2 MB VRAM, 1 MB DRAM, Level 12	735
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ORCHID Fahrenheit 1280°, 1 MB VRAM	205
ORCHID Fahrenheit VA VESA LB, 1 MB	189
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486DX 50/33	$175
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486DX 66/50/33	$450

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14" .39 (1024)	$225
14" .28 1024/NI	270/325
14" Flat Screen Mono	95

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Mouse Pad	3

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SVGA 1MB (1024)	56

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DJ10 (120MB)	$185
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FC-10	95
TC-15 Controller	195
QFA 700MB	725
TC-02 (required)	259

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Full Tower w/250W	138
Slim Case w/200W	95

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Keytronics 101	45
BTC101	29
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GSX 140/145	269/355
GSX 240	329

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Microsoft Ser/Bus	$79
Logitech Mouseman	64
Logitech First	35
Logitech Trackman	69
Microspeed Track Bus	99
Microspeed Serial	83
3-Button Mouse	14

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3C507/TP	279/299
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5 User/10 User	479/1079
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Look at our other pages for more peripherals.

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486DX2-66 VLB	$860	Corporate Buyers				$1,734	$1,891	$2,016
486DX-50 VLB	$750	48 hrs On-Site plan available			$1,397	$1,624	$1,781	$1,906
486DX-33 VLB	$621				$1,269	$1,495	$1,652	$1,777
486DX2-66 EISA	$938				$1,585	$1,812	$1,969	$2,094
486DX-50 EISA	$828				$1,475	$1,702	$1,859	$1,984
486DX-33 EISA	$699				$1,347	$1,573	$1,730	$1,855
486DX2-66 ISA	$795		$1,077	$1,304	$1,442	$1,669	$1,826	$1,951
486DX-50 ISA	$685		$967	$1,194	$1,332	$1,559	$1,716	$1,841
486DX-33 ISA	$556	$780	$838	$1,065	$1,204	$1,430	$1,587	$1,712
486SX-25 VLB	$410	$634	$692	$919	$1,057	$1,284	$1,441	$1,566
386DX-40 ISA	$318	$541	$599	$826	$965	$1,192		
386SX-33 ISA	$262	$485	$543	$770	$909	$1,136		
386SX-25 ISA	$251	$474	$532	$759	$898	Free mouse w/ all systems		

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All Basic Configurations [systems] include Motherboard, 1MB RAM, Mini Tower Case, IDE [1:1] Controller, 2SPG, 1.4 Floppy, 101 Keyboard

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Motherboard	DIAMOND FASTBUS	MICRONICS	ORCHID	ORCHID	MUSTANG
Power	486-66 256K CACHE	486-66 256K CACHE	486-66 256K CACHE	486-66 256K CACHE	486-66 256K CACHE
Video Power* [max]	50 winmark	26 winmark	50 winmark	42 winmark	50 winmark
RAM	8MB-70 exp to 128MB	8MB-70 exp to 128MB	8MB-70 exp to 32MB	8MB-70 exp to 32MB	8MB-70 EXP TO 32
BIOS	AMI	PHOENIX	AMI	AMI	AMI
Exp. Slots	2 VESA, 5 ISA	2 VESA, 6 ISA	2 VESA, 6 ISA	2 VESA, 6 ISA	2 VESA, 6 ISA
Floppy Drives	1.2, 1.44 Teac Drives	Same	Same	Same	Same
HFC	On-Brd 16 bit dsbld	On-Board 32 bit	32 bit orchid VLB	32 bit orchid VLB	Mustang vlb 32b ideio
	32 bit orchid VLB	NA			
Case	Med Tower 230 PS	Same	Same	Same	Same
Keyboard	Keytronic/Maxi switch	Same	Same	Same	Same
Video Card	DIAMOND-VIPER	ATI-ULTRA PRO	ORCHID CELSIUS 9000	LEVEL 11	DIAMOND VIPER
Special Features				Virtual Rsltn upto 2048x1024 on	
	2MB VRAM	2MB VRAM	2MB VRAM	any mntr ---2MB VRAM (optnl 3MB)	2MB VRAM
	1280X1024X256Clr 74Hz NI	Same	Same	Same	Same
	1024x768x66kClr, 76Hz NI	Same	Same	1024x768x66KClr, 100Hz NI	Same
32bit Proc	WEITEK P9000	MACH32	WEITEK P9000	S3 928 GUI Accelerator	WEITEK P9000
Video Mnfr #	408-736-2000	416-756-0711	510-683-0300	617-674-0009	408-736-2000
Price	**$1,850**	**$1,850**	**$1,765**	**$1,925**	**$1,670**

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200ms acc., 330kb/sec, 256k cache buffer, CD photo
multi session, XA, SCSI-2. PA16 Card, caddy
(interface kit also available)......$610.

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Sony CD with Cont.
Cables, drivers.
Installation included
..............$125

SVGA Monitor
.28 Dot Pitch 1024x768
.............$229
Non- Interlaced .28
......1024x768...$264

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3.5"....................$959
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5.25"...............$1095

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Western Digital IDE
340MB HD, 12ms,
2 year warranty
.............$420

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Motherbaords w/ CPU
486SLC-25 Cyrix ISA
486SX-25 Intel local bus
.......$149/249

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..........$189/199

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1280 NI, .31 Dot Pitch
Sampo 20"
1280 NI, .31 Dot Pitch
.......$1175/963

17" MONITORS
MAG 17F 1280, .26 Mp
Sampo 1766B 1280 .31
Toshiba CU01 1024 .31
$975/675/649

NEC 4FG(OEM w/Card)
1024 NI, .28, Microp MPRII
MAG MX15F
1280 NI, .28 Dot Pitch
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14" TERMINAL LAN READY-VGA

(Incl. Monitor and K/B)

$369.00

LOCAL BUS

MOTHERBOARDS

(Many of our new M/Bs have Pentium Socket)

Mustang 486SX-25 ..(upgrdbl)	**265**
Mustang 486-33/50/60 w/256k	**460/590/700**
ORCHID 486-33/50/66-256	550/680/795
Diamond Fstbs 33/50/66.w/Idelo	**640/770/880**
Micronix 486-33/50/66	**735/868/980**

CONTROLLERS

DTC 2270 8.3MB/sec IDE / IO	**81**
Mustang IDE/IO	**52**
ORCHID IDE/IO vlb	68
Mustang IDE/IO Cach15.6mb/sec	198
UltraStor SCSI 34F, 32k Card..10mb/sec.	269
UltraStor SCSI 34F, 32k Kit	**329**

GRAPHIC ADAPTERS

wm = winmark ver2.5

DIAMOND

Stealth 24vlb S3-805..1mb dram	**164**
Stealth pro 1/2MB vram,36wm	265/340
Viper 1/2MB,9000,50wm	330/405

ORCHID

Farenheit S3-805, 1/2MB	165/??
Same with voice annotation	219/??
Celsius 9000	419

GENOA

ET4000	149
8500VL, cirrus logic	136
8700VL, S3-805	180
ATI Ultra Pro, 2MB, 26wm	460
Mustang VLB Cirrus logic 1MB	**115**

PORTABLES

NOTEBOOKS

TWINHEAD SLIMNOTE

386 SXL-25, 2MB, 60MB / 80MB	$1294 / $1339
486 SLC-33, 2MB, 80MB/130MB	$1650 / $1794

LEADING EDGE

386 SXL-25,4MB, 80MB	$1431
386 SL-25, 2MB, 80MB, COLOR	**$1980**

CHAPLET/SUNRACE

386 SX25, 4MB, 80MB/120MB	$1199 / $1399
486 SLC, 2MB, 80MB/120MB	**$1475 / $1599**

(........the only notebook w/SCSI port........)

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MOTHERBOARDS

(Many of our new M/Bs have Pentium Socket)
Also See Local Bus Section

286-12/20	**49/59**
386SX-16/25/33	**79/87/92**
Stallion 386DX-40 w/64k Cache	**157**
Stallion 486SLC-25 Cyrix	**$169**
Stallion 486DLC-33/40 w/64K	**$219/275**
Stallion 486SX25	**$246**
Stallion 486DX-33 w/64k	**$395**
Stallion 486DX-33 w/256k	**$419**
Stallion 486DX-50 w/256k	**$554**
Stallion 486DX2-66 w/256k	**$672**
Stallion EISA 486DX-33 w/256k	**$509**
Stallion EISA 486DX-50 w/256k	**$639**
Stallion EISA 486DX2-66 w/256	**$759**

VESA Motherboards.....see Local Bus Section

Call for pricing of M/Bs w/o CPU

CONTROLLERS

IDE 2FD/2HD	$12
IDE 4FD/2HD	$33
IDE w/ 2SPG..gen/WD	$16/26
IDE Caching UltraStor	**$199**
IDE EISA DTC	$135
MFM ST21M	$37
RLL 4FD/2HD	$69
Kouwell 531 4Port Serial 16C550	$69

SCSI

Future Domain Comp	**$52**
DTC	$99
ADAP 1522B,C/Kit	**$90/140**
ADAP 1542C/Kit	**$205/255**
ADAP 1742 EISA	**$429**
DTC EISA Caching	$485
MYLEX EISA Caching	**$565**
DPT Smart Cache+EISA	$540

ESDI

DTC	$119
Maple 64K new version	**$130**
Ultra 12F 32K	**$164**
Ultra 22F Caching EISA	$449
XT FDC360/1.2	**$13/24**
XT HDC	$45

ADAPTERS

(See Local Bus and CAD Sections too)

MGP	$12
Color Card	$23

VGA/SVGA

VGA 256k	$25
Trident 512K/1MB	$38/55
Tseng 1MB	$75
Mustang 1MB Window Accel	$84
Diamond Speedstar 24X	**$159**
Diamond Stealth 24	**$164**
Fahrenheit Plus wo/w VA	$165/219
ATI Ultra Grpx 1MB w/Mouse	**$239**
ATI Ultra Plus w/2MB	**$329**
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MONO

Mono 12"	$73
Mono 14"	$91
Mono 9" VGA	$135
Mono 14" SVGA 1024 x 768	$109

VGA/SVGA

VGA 13" .28 Color.......ref	**$150**
VGA 14" .41 Color......ref	**$159**
VGA 14" 640 x 480, .51 / .41	$168 / 197
SVGA 14" 1024 x 768, .39 dpi	$209
SVGA 14" 1024 x 768, .28 dpi	**$239**
CTX Autoswitch 1024, .28 dpi	$255
SVGA 14" 1024x768 .28 NonInt	$269
Black SVGA 1024,.28 dpi	**$279**
CTX 14" 1024 .28dpi Hitachi NI	**$299**
Viewsonic V6E 14", 1024 .28 NI	$343
Sony 1304S 14" .25 dpi Low Rad NI	$545
Mitac 1564S15" .28 dpi 1280x 1024	**$399**
Samsung15" NI Flat .28dpi 72 Hz	$449
Mitac 17" .31dpi 1024 72Hz NI	**$599**
Samsung 17".26dpi 1280NI Microp	$899
Maganavox20" 1280 x 1024 NI	**$1357**

See Many High-End Monitors in the Engineering/CAD Section.

CASES/PS

Baby Desk/Tower w/ PS	**$54/52**
Medium Tower/Full AT w/ P	**$77/69**
Full Tower/Super T. w/PS	**$89/155**
Rack Mount W/PS	**$299**
File Server w/ 400W PS, 3 Fans..............12 F/HDD, black/beige	**$494**

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Baby Desk/Tower w/PS	**$79/62**
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1HH...65W	**$89**
1FH/2HH...65W	**$110**
2FH/3HH...65W	**$137**
SCSI Cables Int/Ext	**$9/10**

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XT Power Supply	**$34**
PC Power XT Turbo Cool 230	**$80**
220 AT	**$46**
PS2 200/300W	**$40/95**
Full Tower 230W	**$58**
Full Tower 300/400	**$80/154**

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Spill Resistant 101 Enhanced	$24
MaxiSwitch / M-Click	$31/34
KeyTronic	$35
BLACK 101	$39
SEJIN J-Mouse(mouse under 'J' Key)	**$89**

Also line of European/Arabic KBs

S-Mouse/TBall	$10/25
LogiTech First/2btn Ser	$39/19
LogiTech MouseMan Ser/Par	$64
Microsoft Original	$69
BLACK SERIAL	**$19**

Tel: [408] 496-6853 ASA COMPUTERS Fax: [408] 988-0359

DRIVES

Floppy Drives

YE Data 1.2 / 1.44	$50 / $45
Teac 1.2 / 1.44	$54 / $48
Teac Dual Floppy 1.2 + 1.44 MB	$139
YE Data/Teac 2.88 MB	$82/89

........................Special Controller Required

IDE

ST157A 40MB 28 msec	$119
CON 40MB 25 msec	$134
ST 40MB 19 msec	$139
WD 80MB 16 msec	$179
CON 80MB 19 msec	$179
CON 120MB 19 msec	$205
MXT 130MB 15 msec	$198
CON 170MB 17 msec	$249
CON 212MB 12 msec	$319
MXT 213MB 15 msec	$289
MXT 245MB 15 msec	$314
WD 340MB 12 msec	$449
MXT 340MB 15 msec	$529
FUJ 330MB 12 msec 5yr	$589
FUJ 540MB 12 msec 5yr	$839
CON 540MB 12 msec	$879
MXT 540MB 12 msec	$869

MFM

ST80......full h	$259

ESDI

MXT 338 / 670MB	**$995 / 1190**

SCSI - 3.5"

MXT 130MB 15 msec	$234
MXT 213MB 15 msec	$315
CON 212MB 12 msec	$325
MXT 340MB 15 msec	$559
Quantum PRO 425MB 9msec (limited stock)	$695
FUJ 425MB 11 msec 5yr	$809
FUJ 520MB 11 msec 5 yr	$839
CON 540MB 12 msec	$855
MXT 535MB 12 msec	$895
MXT 540MB 8 msec Magix	**$1049**
TOSH 877MB 12.5 msec	**$979**
MXT 1.2GB 8 msec Magix	**$1485**
ST 1.2GB 10 msec	$1465
FUJ 1.2GB 10 msec	$1499
TOSH 1.2GB 12 msec	**$1229**

SCSI - 5.25"

ST 670MB 14 msec	$1029
ST 670MB 11 msec	$1329
ST 1.2GB 14 msec	$1145
MXT 1.2GB 13 msec Panther	**$1179**
FUJ 1.2GB 14 msec	$1259
MXT 1.7GB 13 msec Panther	**$1459**
ST 1.7GB 14 msec	$1455
ST 1.7GB 11 msec Elite I	$1889
ST 2.1GB 11 msec	**$1879**
FUJ 2.0GB 11 msec	$1995
Fuj 2.4GB 12 msec	$2395
ST 2.4GB 11 msec Elite II	$2539
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(<500MB TAPE-BACKUPs)

Colorado 120 / 250MB	$152 / 203
...Colorado KE-10 External kit with card	$105
....Colorado External port card	$37
...FC-10 high perf card	$85
Colorado Trakker 120 / 250MB	$344 / 404
Summit Express 305MB 10Mb/sec	$264
Archive Viper 215MB hh SCSI I/E	$469/ 875
Viper 525MB hh SCSI Int/Ext 6MB/sec	$679/950
YE DATA 600MB SCSI	**$529**

(>500MB for PC / SERVER)

Colorado 700MB	689
.......FC-15 high perf card	$181
Anaconda 1.35GB Int 5.25 hh SCSI-2	$920
Colorado 2.4 / 4.0 GB Qic 5.25	$969 / 1499
Python 2GB3.5"4mmDATSCSI .5m I/E	$1175/1468
Python 4[8]GB 3.5" DAT SCSI .5m I/E	$1319/1587
HP 2GB DAT 4mm Int/Ext	$1140 / 1255
HP 5GB DAT 4mm Int/Ext	$1320/1475
MAYNARD 2GB 4mm DAT Int/Ext	$1890 / 2060
MOUNT FS1200 4mm DAT Int/Ext	$1840/2133
EXABYTE 2GB 8mm DAT Int/Ext	$1485 / 1815

..(above drives require special contr & soft drivers)

TAPE BACKUP DRIVERS

NOVASTOR

Novaback for DOS	$89
Novaback for OS/2	$89
Novanet Multiuser NLM	$439
SYTOS for DOS/NOVELL, GEN	$185
ARCserve Solo	$185

OPTICAL DRIVES

ERASABLE(Rewritable)

RICOH 128MB RO-3010E 3.5" Int	$1045
RICOH 5031E Internal 650MB	$2250
PINACLE MICRO 650MB 19msec	$2995
PANASONIC 1GB Internal	$2489
MAXOPTIC 1GB Tahiti IIM 35msec	$2685
PINACLE MICRO 10GB 19msec Ext	**$7995**

SUPER hard DRIVES

Seagate Barracuda 3.5" HH (8 msec avg. seek, 4.17 msec lat., 7200 RPM)
Barracuda 1.7 / 2.5 GB..........July / August

FLASH Card Hard DRIVE

1.8" / 2.5"; .28: High; less than 1.5 msec sleep; 5 - 40 MB Capacities........... ....shipping soon.

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Floppy 1.44 Bulk	$.79
Floppy 1.2 Bulk	$.49
Tape DC2000XL	$18
Tape DC2120 250MB	$18
DT-2400 2.4GB .25" Cartridge	$54
DT-4000 4.0 GB .25" Cartridge	$57
DAT 4mm 60/90 mtr	$19/29
DAT 8mm 54/112 mtr	$18/24
Syquest 44MB Cart	$66
Syquest 88MB Cart	$97
Bernoulli 44MB 3Pk	$315
Bernoulli 90MN 3Pk	$415
Magneto-Optical 650MB Cartridge	$159

SOFTWARE

Utilities

Norton Anti Virus2.1 / Utilities6.01	$81/107
PC Tools 7.1 w/Antivirus	$99
MS Works for Windows	$124
After Dark Startrek	$39
Carbon Copy Plus 6.1	$149
Corel SCSI Software	$79

Databases / Spreadsheets

DBASE IV 1.1	$469
FOXPRO 2.0	$490
QuattroPro/Lotus 1-2-3	$299 / 379
MS Excel for Win V4.0	$298

Desktop Publishing/CAD

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Harvard Graphics for Win	$335
PageMaker for Win	$475
Word Perfect 5.1	$256
Corel Draw 3.0	$336
Adobe type manager	$65
MS Office for Windows V4.0	$479
Design CAD 3,1 3D	$218
AutoCAD Release 12	$3095

Operating Systems

SCO UNIX DEV sys3.2.4	$849
SCO UNIX GT m user 3.2.4	$849
DOS 3 / 4 / 5 w/sys	$36 / 42 / 52
DOS 6..DR	$69
Windows 3.0 / 3.1 upg w/sys	$49
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w/ Ext Case, Cbls, Cart., Cont	$485
Syquest 88MB Dr	$359
Bernoulli 44 Insider	$907
Bernoulli 90 Insider	$840

Cartridges see storage media

IDE: Upto 1GB removable kits	**$39**
SCSI: Upto 1GB RemKits	**$138**

TURN PAGE BACK FOR ANOTHER ASA AD

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ENGINEERING CAD / CAM

Monitors

Corner Stone Tech

DualPage 120I, 19" 1600x1280 120dpi	$1795
.....PC161I DualPage 120I Cont	$739
DualPage 150I 19" 2048x1536 150dpi	$2190
.....PC202I DualPage 150I Cont	$1045

Hitachi

CM1584MV 15" FST .28, 1280NI, MPRII	$499
CM1785MV 17" FST, .28. 1280NI, MPRII	$910
CM2085 20" 1280 Anti Glare	$1275
CM2087 20" 1280 72Hz Microp	$1675
CM2187 21" FST 1600x1280 Microp	$2145
ACCUVUE PS-21FST, .28. 1600x1280, Micr	$2220

Toshiba

P17cu01 FST 1024..31automode.($649*)	$679
P21CR 21", .31, 1280NI, MPRII	$1925

Sony

CPD1304S 14", *MPRII*, 70Hz.....($530*)	$579
CPD 1430 14"	$599
CPD1604S 17"..Orig/OEM	$985 / 905
GDM2036S 20", .1280NI, MPRII	$1985

Sampo

Sampo 17" NI 1280 x 1068	$699
Sampo 20" NI 1280 x 1068	$1040

Nanao

F340iW 15", .28, 72HZ, MPRII, Micrp	$689
F550I 17", FST, 1280, .28, *MPRII*	$1085
T560I 17", Trin, 1280, .26, *MPRII*	$1675
T660I 20" Trin, 1280, 72Hz, MPRII, Micrp	$2440
F750i 21", .31, 1280, 72HZ, Micrp	$1999

Magnavox

20CM64 20", 1280NI, .31	$1345

NEC

3FGX 15", .25 ....(*$629)	$679
4FG 15", .25, Microp ....(*$720)	$779
5FG 17", .26, Microp	$1339
6FG 21", .26, Microp	$2399

MAG

MX17F, 17" .26, 1280NI, Microp	$1060
MX15F 15" .28, 1280NI, Micrp	$575

PHILIPS

1764DC 17" .26, FST, 1280NI, Micrp, MPRII	$1050
1762DT 17", TRIN, .25, 1280NI, Micrp, MPRII	$1099
2082DC 20", TRIN, .30, 1280, 72HZ	$2140
2182DC 21" .28, 1600X1280, Micrp, MPRII	$2575

GRAPHIC ADAPTERS

(Also See Local Bus and Adapters Sections)

NUMBER NINE - #9GXI

L23 WIND/ACAD, T34020, 1280, 16C	$929
L25F, 40MHZ, WIN/ ACAD,, 1280, 256C	$1195
L29 T34020, 1024X768X16.7M COLOR	$1315

NUMBER NINE - #9 GXE

L11 S3928, 2MB VRAM	$539
L12 WITH 3MB VRAM	$685

HERCULES GRAPHITE	$289
MYLEX GXE020B Ti34020	$1045

DIAMOND COMPUTERS

Speedstar 24X	$159
STEALTH 1MB	$189

GENOA

7900 16m Color (24 bit color)	$129
7860 1MB Hi-Color	$132
8860 S3 Chip Hi-color	$189

The bold items are always in stock Sorry, we don't have all Monitors, Plotters, Digitizers, & Scanners on Display. Please treat these as Catalog orders.

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PLOTTERS DIGITIZERS SCANNERS

PLOTTERS

HOUSTON INSTRUMENTS

Im Maker 1117, A/B, 8 Pen, HPGL	$632
DMP-161 A-D, 8 Pen, HP-GL/2	$2625
DMP-162 A-E, 8 Pen, HP-GL/2	$3439
DMP-162R A-E, 8 Pen, Roll Med	$3975
V50(INKJET A-C SIZE).....NEW	$1410

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SUMMAGRAPHICS

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KURTA

XLP 12x12 w/4btn & Pen	$249
XLP 12x18 w/16btn or 4btn, Pen	$529
IS/ONE 12x12 4btn / 12btn / Pen	$329
IS/ONE 12x17 4btn / 12btn / Pen	$530
(IS/ONE also available w/Cordless 4btn or Pen)	
XLC 24 X 36	$1260
XLC 18 X 24	$1070

CALCOMP

CALCOMP 12 X 12	$279
CALCOMP 12 X 18	$629
CALCOMP 18 X 24	$1275
CALCOMP 6 X 9 P Series	$439
CALCOMP 12 X 12 P Series	$485

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SCANMAN-COLOR	$505
SCANMAN 256 / CatchWord PRO	$220/260
SCANMAN 32 / CatchWord PRO	$130/155

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SCANMAKER IIXE 1200dpi, MAX	$1140
SCANMAKER 1850 1850 dpi MAX	$1360
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6000C 600dp, with colorshop software	$770
8000C 800dpi, with color shop software	$1040
1200C 1200 dpi, with color shop software	$1490
..Picture Pub LE or WordScan OCR	$64
..Slide Scan Kit for 6000C/8000C	$550
..Slide Scan Kit for 1200c	$650

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NE2000 16bit ThinThick	$141

ADVANCED LAN NETWORK

NE2000 Comp 16bit Thin/Thick	$64
.........5 Pack	$295
NE1000 Comp 8bit Thin/Thick	$59
Arcnet 8/16 bit	$59/69

WESTERN DIGITAL[SMC]

16 bit Ethernet Thin/Thick..bulk	$139

3COM

3C503 16 bit Coax/10BaseT	$162/174
3C507 16 bit Coax/10BaseT	$274/294
3C579 32 bit EISA Coax/10BaseT	$253
D-LINK 16bit 10BaseT 1/6pk	$74/429
CeLAN 16bit 10BaseT 1/6pk	$69/399

ARTISOFT

AE-2/3 Lantastic Kit	$445/525
AE-2/3 Lant Kit for Win	$499/575
AE-2/3 16 bitAdapter	$195/231
Z-2 Lite Kit 2 Stations	$94

TOKEN - RING ADAPTERS

K1604 "TROPIC" Chip 16/4 mbps	$399
RaCone 16/4 8 bit Type 3	$259

POCKET LAN ADAPTERS

CeLAN/D-Link 10BaseT or Coax	$159/189

HUBS

CeLAN 8 Port 10BaseT/Coax	$255
CeLAN 16 Port 10BaseT/Coax/MUI	$495
D-LINK. 12 Port 10BaseT	$495
D-LINK DE-1500 w/ SNMP	$875
K1032 32 Port w/SNMP	$2545

INTELLIPORTS - COMPUTONE

Advantage 8 ATV8DB25	$477
Intelliport AT8DB25	$625
Intelliport AT16DB25	$999

NOVELL NETWARE

Ver 2.2 5/10 User	$470/1050
Ver3.11 5/10/20/50 User	$580/1300/1710/2620
Ver 3.11 100/250 User	$3553/6765
NEW RELEASE VERSION 4.0	
Ver4.0 5/10 User	$884/2010
Ver4.0 25/50 User	$2999/3999
Ver4.0 100/250 User	$5599/9999
Ver4.0 500/1000 Us	$16400/29999
	upgrades available
NOVELL-LITE	$69

WINDOWS FOR WORKGROUP	
..ADD-ON STARTER KIT	375
..ADD-ON USER KIT	$189
..ONLY SOFTWARE	$68

NETWORK HARDWARE

ETHERNET RG58 CABLES	
Readymade w/Connectors 10'/25'/50'	$4/8/12
Bulk 1000' SPOOL	$89
Terminators / All Conn	$1.50

UPS's

AMERICAN POWER

APC-BK250, 7min, 386SX, WS	$101
APC-BK400, 10min, 286, 386 WS	$163
APC-BK450, 10min, 386, 486 FS	$195
APC-BK600, 15min, 386, 486 FS	$265
APC-BK900, 15min Multiple FSs	$379
APC-BK1250, 15min Multiple FS	$506
Power Doctor	$70
Call UPS	$99
SMART-UPS (ON-LINE/AUTO BACKUP)	
APC-400, 10min, 286, 386 FS / WS	$304
APC-600LS, 15min, 386, 486 FS / WS	$394
APC-900, 15min, CAD/CAM WS/FS	$569
APC-1250, 15min, Multiple FSs	$747
APC-2000, 20 min, Mini Computers	$1170

Note: International version is also available.......

SERENA 5.25" 300VA UPS mounts Inside PC

INTERFACE-KITS /SMART MONITORING

PowerChute SCO Xenix	$84
PowerChute Plus for Unix / Xenix	$115
PowerChute Plus for Novell	$72
UPS Monitoring Board - Novell	$69

MULTI MEDIA

SONY CD-ROM Int Kit.installed	$125
NEC CDR-84/7280ms,..300KB/sec/E	$554/618
TOSHIBA txm3401B/E, int/ext	449 / 535
...200ms access , 330 kb/sec	
Texel DM 3024/5024 265ms Access	
........300 KB/sec Int/Ext	$365 / 460
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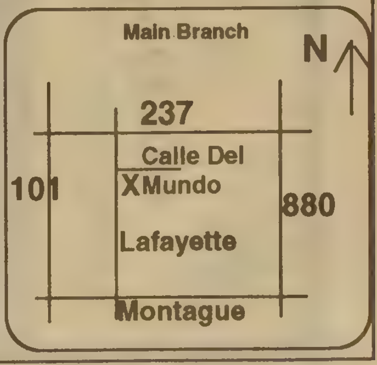

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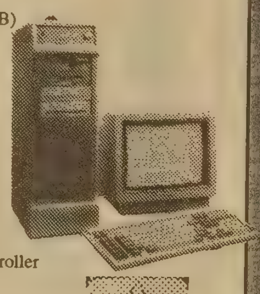

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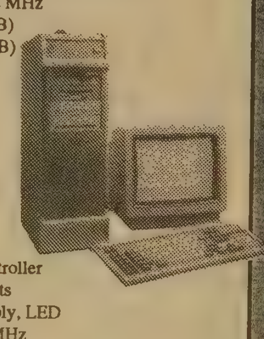

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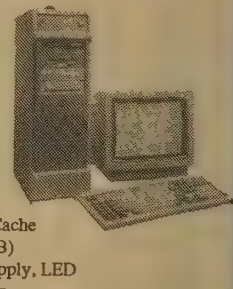

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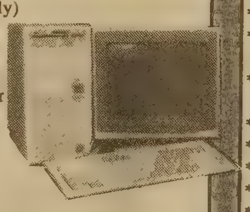

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- *101 Enhanced Keyboard
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- *2HD/2FD IDE Controller w/2 Serials, 1 Parallel, 1 Game Ports
- *Tower Case w/230 Watts Power Supply
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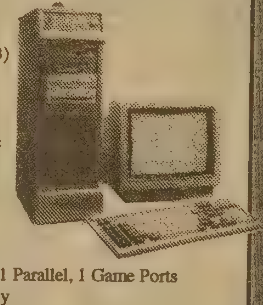

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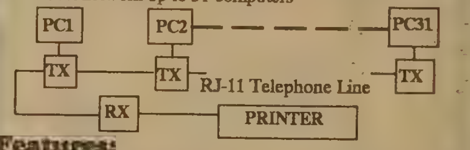

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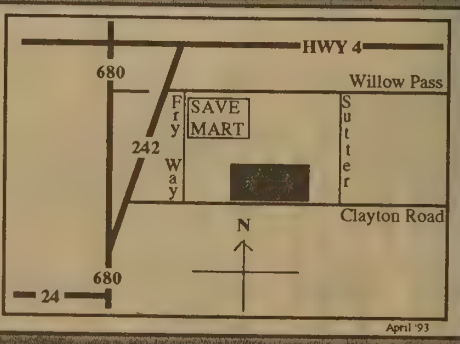

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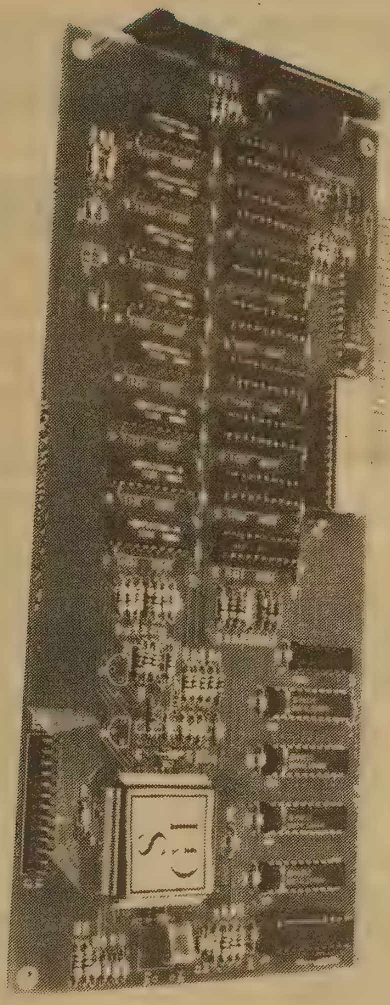

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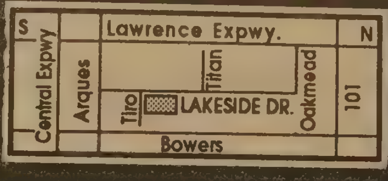

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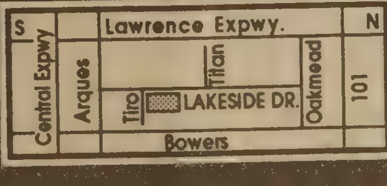

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Lost In The Makuhari Messe

BMUG Goes To Tokyo

BY DAVID MORGENSTERN

B M U G

What an experience I had in February—helping out in the BMUG booth at the Tokyo Macworld Exposition. We met many of our Japanese BMUG members and spoke with thousands of excited Macintosh users. It was a real privilege to rub shoulders with our exceptional volunteers and hear firsthand what's happening in the Land of the Rising Mac.

There was no difficulty in recognizing the BMUG delegation. Could there be more than one bunch of tie-dyed t-shirt-sporting nerdy *gaijin*, analyzing every high-tech advertisement on trains, or the back of magazines being read by innocent subway-riding bystanders, or on the gigantic television displays covering the sides of buildings? Not in Japan.

The restaurant scene was very Berkeley, as well. Our poor translator, Tom Gardner, was pushed to the edge of sainthood trying to find menu items for some strict vegetarians, non-fish eating carnivores, and no-red-meat-or-fish-but-everything-else-whatever-that-is-itarians. I am well trained to eat everything and anything that is placed before me—and enjoy it! Yes, I will have some more salted, fermented sea-something-or-other. Yummy.

MAC-UHARI MACWORLD

The Tokyo Macworld Expo is actually held in a suburban hall twenty-five minutes outside of Tokyo proper, called Makuhari Messe. Macintosh users from all over the country came to see the latest and greatest. Although the show management claimed that the Tokyo Expo is the biggest, with almost one hundred thousand attendees, there were fewer vendors, developers and products than were at the San Francisco Expo.

The Expo featured games, computer music hardware and software add-ons, and graphics-related products. There were many KanjiTalk ports of American favorites, as well as home-grown flavors of software, hard drives and graphic cards—many looking for US distributors.

The high price of software was the biggest complaint voiced in the BMUG booth—so what's new? This is the complaint heard at every computer show around the world. This criticism was not aimed at our BMUG prices, which were the same as at the American Expo, but about the general price levels in Japan. They've grown accustomed to US companies shipping over products with 200% price increases, and then not supporting their foreign users. It's beginning to look as if American companies with J-localized versions are starting to support them as they should.

Here are a couple of products I found the most interesting:

•I appreciated the work that FontLand is doing with TrueType and Unicode, the international standard for the two-byte character set. FontLand has put together a database of all 50,000 Kanji. Each Kanji character is written as it appears in Japanese, Korean, and the two Chinese groups. The database gives the character codes for each of the languages' current ISO 8-bit character sets, the pronunciations, and the brush stroke numbers for each character. They've done the TrueType fonts for the current language sets, and have created a bitmap for all 50,000 characters in the full Unicode specification. FontLand said it would take another six months to complete TrueType conversion of the rest of the characters.

•I was blown away by all the interesting CD-ROM-based picture books. I call them coffee table CDs, and there were many varieties, including sepia nude photographs, fantasy "adventure" tours, and Gothic sight 'n sound experiences.

Cellofania by Tonkinhouse is a young children's picture book on the computer. All the objects in a particular picture can be clicked on and perform some action. There's no spoken dialogue on the disk, but rather digitally recorded music composed especially for the project. Kazu Ichigaya, New Product Planner at Tokyo Shoseki Co. says, "It's for fun. It creates small talk and a sharing experience between children and their parents." The company said that Cellofania would be available in the US soon.

The REFIXION series of CD-ROM titles are

Copyright © 1993 by David Morgenstern. All rights reserved. David Morgenstern believes that computers and BMUG can cultivate a positive change in the world. He volunteers time at BMUG, when he's not working his "regular job," writing, or prowling around the BMUG Bulletin Board. He can be reached through the BMUG office, AOL: daviD eM, CIS: 72030,1607, and Internet: davidm@sfsuvax1.sfsu.edu.

> **There was a definite translation gap in some of the names given to products. The BUG Company from Sapporo has a Pickles series of display cards and monitors. Would you have confidence in a computer company named for software glitches? But it's a big company in Japan.**

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part of this new trend in publishing. These are non-narrative (or not strongly narrative) multimedia experiences. REFIXION I is a collection of short stories: "The Anthrax Robot Works," "The Anthrax Robot Works (Funny Fish Mix)," and "Shangri-La." They each have a different visual and artistic sense, with music composed for the pieces.

I played with the second volume in the series, *Museum or Hospital.* It's a series of moody macabre visions, set in the edifice of your choice. Many of these new CD-ROM fantasies are set in identifiable places. *Gadget: Invention, Travel, and Adventure* by Toshiba EMI was heavy on the gadgets, inventions, and train station-motif picture-postcard locals, but adventure? The latest installment of the Indiana Jones saga it is not.

•The best program of the Expo was Cracker Software's Aquazone, a tropical fish aquarium simulation. The simulation had an incredible depth, giving users the ability to make the same mistakes they would make setting up a real aquarium, but without sacrificing real fish.

The program contains an overwhelming amount of information about the behavior of fish, how water effects them, the different chemical and bacterial composition of the water, and their health.

The fish have individual identities; then they breed, have kids, and the kids all have their own identities, based on coded "genetic" information. They're all separate fish, with their own attributes which are passed on through genetic information to their offspring. The developers promised me that they would actually look at some real Macintosh programs before starting work on the US version—Aquazone was their first Mac program.

•There was a definite translation gap in some of the names given to products. The BUG Company from Sapporo has a Pickles series of display cards and monitors. Would you have confidence in a computer company named for software glitches? But it's a big company in Japan.

Pickles in Japan (which are really great and colorful) do not have the cheap, sour, and green American connotations. But "Pickles" doesn't sit right in my desktop vocabulary.

The Grand Vimage 24-bit accelerated graphics card from Interware has an odd name too. A *vimère,* which is the only "vim" beginning word in my French dictionary, means damage or insult. Perhaps they meant visage, a French word for face or aspect.

For some in Japan the Macintosh is a lifestyle. *MacLife,* a popular magazine, had a booth near BMUG's. Mainichi Communications had a new "Mac Infotainment" magazine, *Mac Fan,* with grimacing face-painted wrestlers on the cover. I found myself hard pressed to answer the semi-existential question posed by one vendor: How are you and your Mac today? I was guilty—I had forgotten to speak to my Mac when I phoned home the day before!

•I picked up a copy of the cassette version of the Karakkaze Mac Users Group (KMUG) song. As far as I know, no user group anywhere else in the world has a song—I was very impressed! I passed on the Microsoft logo handtowels, and bought some handkerchiefs printed with the Tokyo transit system for myself—in preparation for my next visit.

THE FIRST IMPRESSIONS: EXPO AND TOKYO

The Western visitor to the Tokyo Macworld Exposition is confronted by the falsity of appearances. On the surface, everything seems to conform to a run-of-the-mill computer show, but quickly the contradictions begin to surface. The Expo is perhaps a microcosm of Japanese society, where rules and expectations are often contrary to Western thoughts, values, and ways of conducting business. Here are a few things that caught the eye of a first-time visitor:

•Even before the Expo started, things were already different. We were amazed by the army of construction workers building the booths in the hall, hammering nails in plywood, and hanging wallpaper on the spot. I watched in fascination as a river of paste oozed toward a dozen color Macintosh and monitors resting on the floor. The booths resulting from all that work were elegant and beautiful. There was a rumor that the Apple booth cost ¥10,000,000 ($80,000)! I thought of the Titanic sinking in the ocean as we watched it being torn down.

•On the first day of set-up, we walked the length of the Convention Center to try and find a way onto the Expo floor to see our booth. We asked a guard if any of the doors were open. He replied that he couldn't tell us which one was open for security reasons—but if we tried each one going down the hallway, we might find one that was open. He was correct. Three Quadras and one Color PowerBook (there were only four in the country at the time) had been stolen by the end of the first day of the Expo.

•I've heard that detailed street maps are not very helpful in Japan, as they are in America. Addresses are given by district, area, or neighborhood, rather than entirely by street. The booth numbering system of the Expo offered similar challenges for the attendees.

There were no numbered "street," or row signs floating above the aisles of the show as we have at American shows, and no booth displayed its given number. Although the Expo guidebook had a map with the numbers, and the primary alphabetic listing of the companies included the booth numbers, it was difficult to figure out where you were on the floor. Directions were usually given with references to the nearest unique booth, or tempura udon vendor.

What Is BMUG?

BMUG is an educational nonprofit consumer advocacy group organized to share information, and provide critical direction to users and developers in the computer community worldwide. It is an independent advocate, not affiliated with any manufacturer, delivering trustworthy information and useful products.

Like any growing organization, it is many different things to its 14,000 international members. BMUG supports many Special Interest Groups (SIGs), an eight-line Bulletin Board System (BBS), free HelpLine, software library, weekly meetings, publications, and much more. BMUG also puts out a semi-annual 350+ page book that we call our "newsletter."

Our motto continues to be: *We're in the business of giving away information.*

Come and join in the dialogue at the BMUG main meeting every Thursday evening, 6:30-9:30 (or whenever we finish), in the Physical Sciences Lecture Hall on the UC campus. BMUG West and BMUG South are monthly meetings held in San Francisco and San Jose.

The BMUG Office, 2055 Center Street (a half block from the BART Station) is open to the public 9 am to 5 pm. Please come by and say hello, meet other members, and hang out.

The BMUG HelpLine, (510)540-1742, and our fax number, (510)849-9026, provide technical assistance and telephonic hand-holding during business hours (11 am–5 pm). If your question can't be answered on the spot, we try get you in touch with someone that can help. Of course, not every problem can have a happy ending—but we try.

BMUG has one of the most up-to-date, comprehensive software libraries around with hundreds of disks filled with the latest versions of public domain or shareware programs, and HyperCard stacks. New disks are unveiled almost every week at the Thursday general meeting. BMUG also brings you the *TV-ROM*™, a fantastic collection of public domain QuickTime videos.

Our new graphic user interface FirstClass 18-line BBS offers many of the latest versions of files in our software library as well as news, private mail, rumors, etc. With our multi-line capability, you can have access to BMUG almost 24 hours a day. It's easy to use, fun, and a great resource.

BMUG can be found on most electronic services. BMUG can also be reached through the Internet international network through UG0001@applelink.apple.com.

To get some further information about BMUG please write to: BMUG, 1442A Walnut St., #62, Berkeley, CA 94709. If you prefer to phone our business office call (510)549-BMUG, or fax (510)849-9026.

•The booths provided another opportunity for culture shock. Everyone in the hall wore plain plastic badges, identifying their

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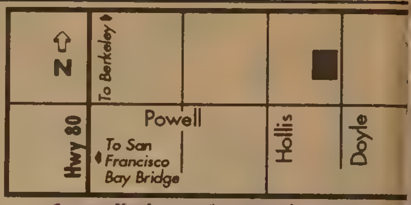

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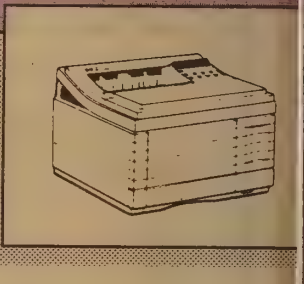

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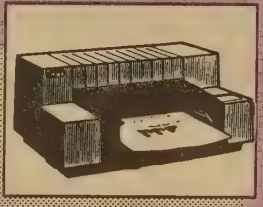

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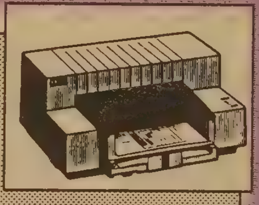

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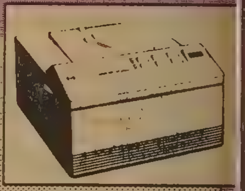

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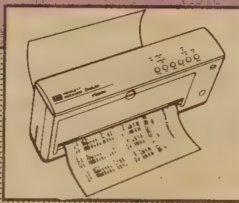

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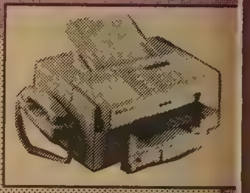

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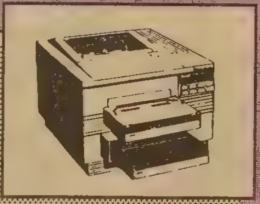

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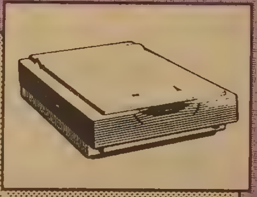

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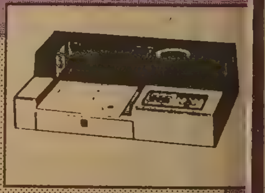

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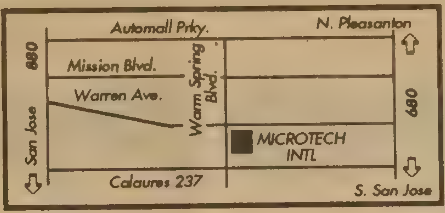

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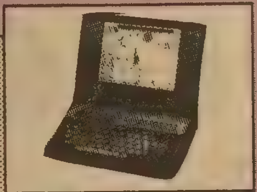

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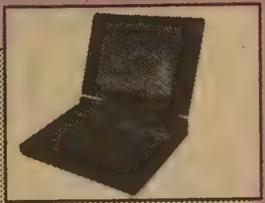

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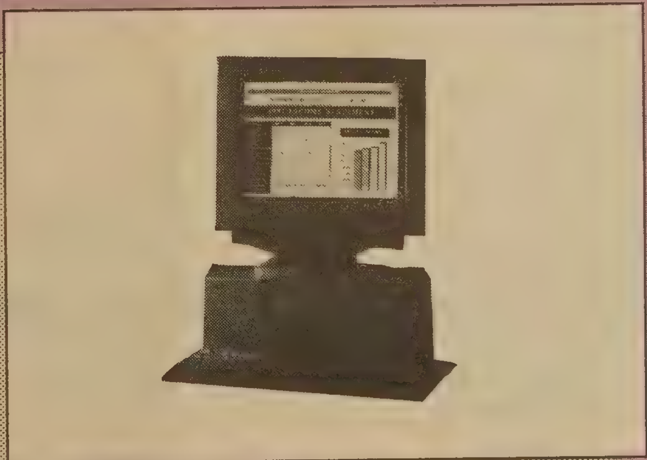

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"class" as attendees or exhibitors, but not their name, or position in the company. All contact is done on a one-to-one basis, with only the ritualistic carefully offered exchange of business cards giving any clues as to with whom you've been talking—and whether they really know what they're talking about.

•The concept of noise pollution has not reached Japanese shores. Our Tokyo Sunday mornings were punctuated with political speech-making that could be clearly heard from a mile away. The shopping districts are a cacophony of human, automobile, and train noise, accompanied by ear-splitting music and sound from multi-story video advertisements on the sides of buildings or billboards.

The sound level from many booths in the Tokyo Expo would be unacceptable in a United States Expo, or perhaps in a factory governed by Environmental Protection Agency regulations. The Fujix booth had its own disk jockey, playing an uninspired rock and roll tune every seven minutes, numbing show personnel for aisles around. Unfortunately, the WordPerfect tap dancing show had to boost their sound levels to compensate, setting off a major and minor sound competition.

BYTES AND PIECES

•Beware that a couple of new viruses are on the loose. One is a new version of the CDEF virus, discovered in New York. The other is a new strain of the T4 virus, called T4-C. These criminal programs can cause grief to your files and system. The T4 virus attempts to modify the system boot code, applications, and system file itself, which might render some systems unbootable. You don't want them on your hard drive.

Version 3.0 of Disinfectant (available on the BMUG Utility V1 disk) will combat these virus strains. Disinfectant is a freeware antiviral application and guardian program, that will watch out for virus infections. Unfortunately, the previous version of the Disinfectant protection extension didn't pick up the new flavor of the CDEV virus, although the application caught it. This problem and some other small bugs have been fixed in this release.

•If you've left your taxes to the last minute, or just filed the extension, you might be interested in the new book by Scott Beamer, BMUG's business guru. *MacInTax Made Easy* will assist you in using ChipSoft's famous tax preparation software. Scott points out areas where users should be extra careful, or where they might assume something they shouldn't. It's published by Osborne McGraw-Hill and is available in your local bookstore for $19.95. ■

Upcoming Events:

April 1	Bering, Disk Café (hard drive utility); Bimillenium Corp., HiQ (numerical analysis).
April 8	Mark Mullen; Virtual Reality on the Mac; Fifth Generation Systems, Utility programs.
April 15	Objective Software, SpreadBase (business modeling); Macworld CD Ventures, Interactive CD-ROM products.
April 19	BMUG South at United Way Office in San Jose. SuperMac, Digital Film (desktop video); Insignia Solutions, Soft PC and Access PC.
April 22	Maxa, FileGuard and WindoWatch (security utilities).
April 23-25	Apple Expo West at Brooks Hall in San Francisco. Say hello at the BMUG booth.
April 26	BMUG West at Exploratorium museum in San Francisco. Software Tutor, Flexware (accounting package); SF Video, NuTech ToasterLink (Toaster file exchange).
April 29	Mobius, Speedster (040 accelerator); Symantec, SAM, Norton Utilities and Norton Essential for PowerBook.

Call the BMUG Announcement Line for the latest information on BMUG meetings, Special Interest Groups (SIGs), and Seminars! 510-849-9114.

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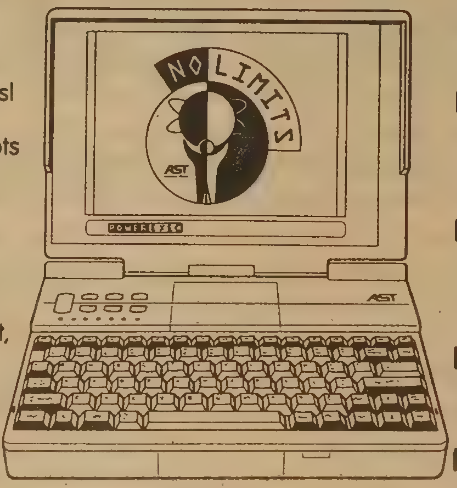

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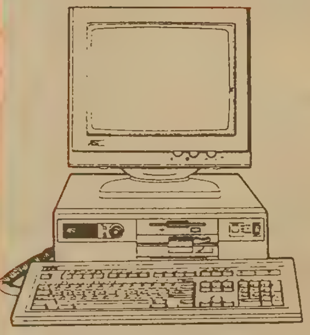

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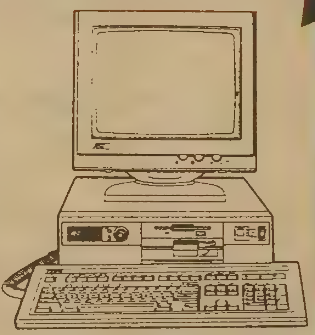

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- 101-Key Height-Adjustable Keyboard
- 2 Serial, 1 Parallel,1 Mouse Port
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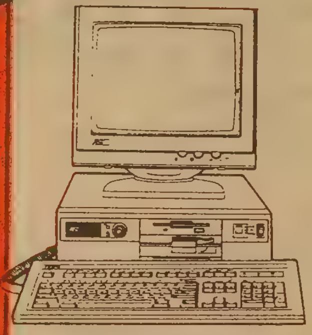
HOT



AST POWER PREMIUM 3/33, 3/25

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- Integrated Premium VGA
- AST FlashBIOS (simplified software-based BIOS upgrade)
- Cupid-32 Upgradability
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- Integrated Floppy Controller/ Connector and IDE interface
- 101/102 Key Keyboard
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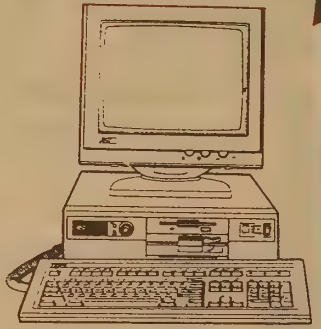

AST POWER PREMIUM 4/66d, 4/50d 4/33, 4/25s

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- Integrated Premium VGA
- AST FlashBIOS
- Cupid-32 Upgradability
- 1.44 MB 3.5" Floppy Drive
- 5 Available 32-Bit EISA Expansion Slots (ISA Compatible)
- Integrated Floppy Controller/ Connector and IDE interface
- 101/102 Key Keyboard
- 2 Serial, 1 Parallel, 1 Mouse Port

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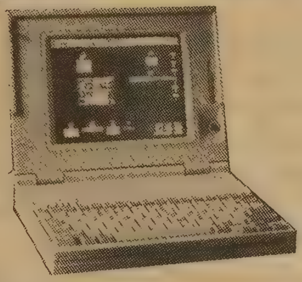

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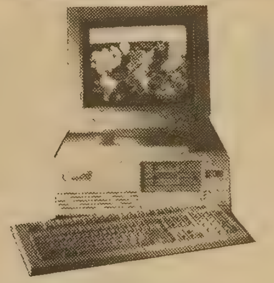

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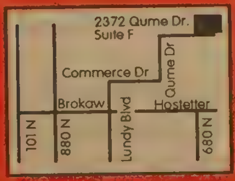

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Interface Design At Microsoft

Making It Work For Real People

BY TONY REVEAUX

When we sit down at the keyboard, it's really the software rather than the hardware we're dealing with in order to get our work done. The ultimate proof of software's value is how much it can do for you versus how little it asks from you in return. Usability, or "user-friendliness," is the measure of that equation.

Software manufacturers go to great effort to make that equation work for the average user. At Microsoft's Usability Lab, expert studies and user feedback contribute to the design of software products.

"You get a fix on what usability is when you, yourself, are the victim of somebody else's bad design. Then you find yourself hostile, angry, and frustrated," says Judy Ramey, director for the Laboratory for Usability Testing and Education, University of Washington.

She recalls, "I read an article once about early cars. When they first drove cars, you would be hurtling down a gravel road at thirty miles an hour in a twelve-cylinder car, adjusting the gas/air mix in each cylinder by hand. That's sort of where, until very recently, we were with computers. Now I drive a car with a credit card and a key."

If you're currently using a computer, you're probably fairly comfortable with at least one platform's interface. For someone who is confronting a computer for the first time, it could look like the control panel of a space shuttle.

Software interface design has always been up for grabs. Much heated debate notwithstanding, there is no "natural" model for programs, nor a universal proven methodology for confirming that the pattern the developer has chosen is really working for the user.

Kornel Marton, Word program manager at Microsoft, says, "When you go to college and they teach you how to design software, and how you design a mathematically pleasing and efficient algorithm for solving a particular problem, what they do not teach you is how to make even a person who has never seen and used a computer before be able to sit down and get a certain task accomplished."

DESIGN AT MICROSOFT

"When you design a software product," says Sam Hobson, Excel product manager, "you don't just put a bunch of programmers in a room with a pot of coffee and tell them to go write code. Instead, it's a real team process, and there are a lot of players here at Microsoft who are involved in that process—the product managers, the user education team, the testing team, development, and program management. The product manager is the customer advocate, and understands what the customer wants. The program manager builds the blueprint for the product, like an architect builds a blueprint for a building, and a developer is actually the person who writes the code that fills that blueprint."

C.J. Liu, product manager for applications marketing, says, "I think the tendency in the software market in the past has been to implement a random set of features, often based upon 'featuritis'—not wanting to appear to lack features that other competitors provide. It's more important to understand what the basic activity is that they are trying to accomplish. Shouldn't we actually concentrate on what users are really doing instead of what we think 'they' might be doing?

"The Usability Lab is one part of an entire process we call 'user-driven development.' There are several different groups within Microsoft that help participate. One is market research. We conduct focus groups of a variety of different users, from new users to advanced users. One of the things that we found out was that a stumbling block for people who use spreadsheets was that people had all these Lotus 1-2-3 macros, and they didn't want to move over to a new spreadsheet without being able to continue to use them. So when we developed Excel 4, we included a new Lotus Interpreter which we designed as a result of information that we gained through focus groups. So focus groups are a direct way to find out what customers really want."

"We're interested in learning what the user's thinking when they use a product," says Mary Dieli, Ph.D., usability product manager. "What assumptions they bring to their product use, how easily they learn the product, how quickly they can find the information they need, how successfully they can use it. We're trying to answer the 'why?' questions. We see our job as not only pinpointing where our product is broken, but why the user had difficulty with the product, and then giving that information to the product team."

Liu adds, "We have testing departments that make sure that the products don't have any bugs, and that the product works as it is supposed to work. Then there's usability testing, the examination of how well beginning, average, and advanced users can actually understand how to get the product to do what they need done, and how hard or easy we've made it to do that. How usable is the product? How intuitive are the interfaces?"

Dieli says, "We ask the users to think aloud as they work. If we watch a user in a laboratory having a lot of trouble with a feature, and they're working quietly and not saying anything, what are we doing? We're making assumptions about why they're having difficulty with that feature. If we have them think aloud, we're hearing the questions that they have in their mind."

Adds Liu, "We also have an instrumented version, a special version of the product which records and audits all the keystrokes that the users actually make. It also tracks mouse actions. It captures everything, including how long the dialog boxes are held open. We will get a feeling for the most common types of activities, or the common types of menu accessions. What we tried to do with the toolbar in Word was incorporate the most common actions—file open, print, etc.—and consolidate them into icons. We found that 25% of the time people were doing edit-cut-edit-paste; they were doing that over and over again. And so that's why we developed drag-and-drop, not only in Word but also in Excel. That's one more instance where we learned something in one application, Word, and moved it over to another application, Excel.

"The other thing we learned in Excel 3 was that most of the time people were creating formulas. Seventy percent of the time they were creating a sum formula. So we installed the AutoSum button on the Tool Bar, since it was something they were doing quite often. Before the product goes out the door, we will make sure that it is intuitive enough to actually accomplish an activity."

PRODUCT SUPPORT AS DESIGN INPUT

"Product support services become an alarm bell for us," says Reed Koch, Word product manager. "When we begin to get a lot of phone calls into support, then we know that we have a problem in that area."

Liu offers some specifics: "We found that people were calling about print merge, and some of those calls would last forty-five min-

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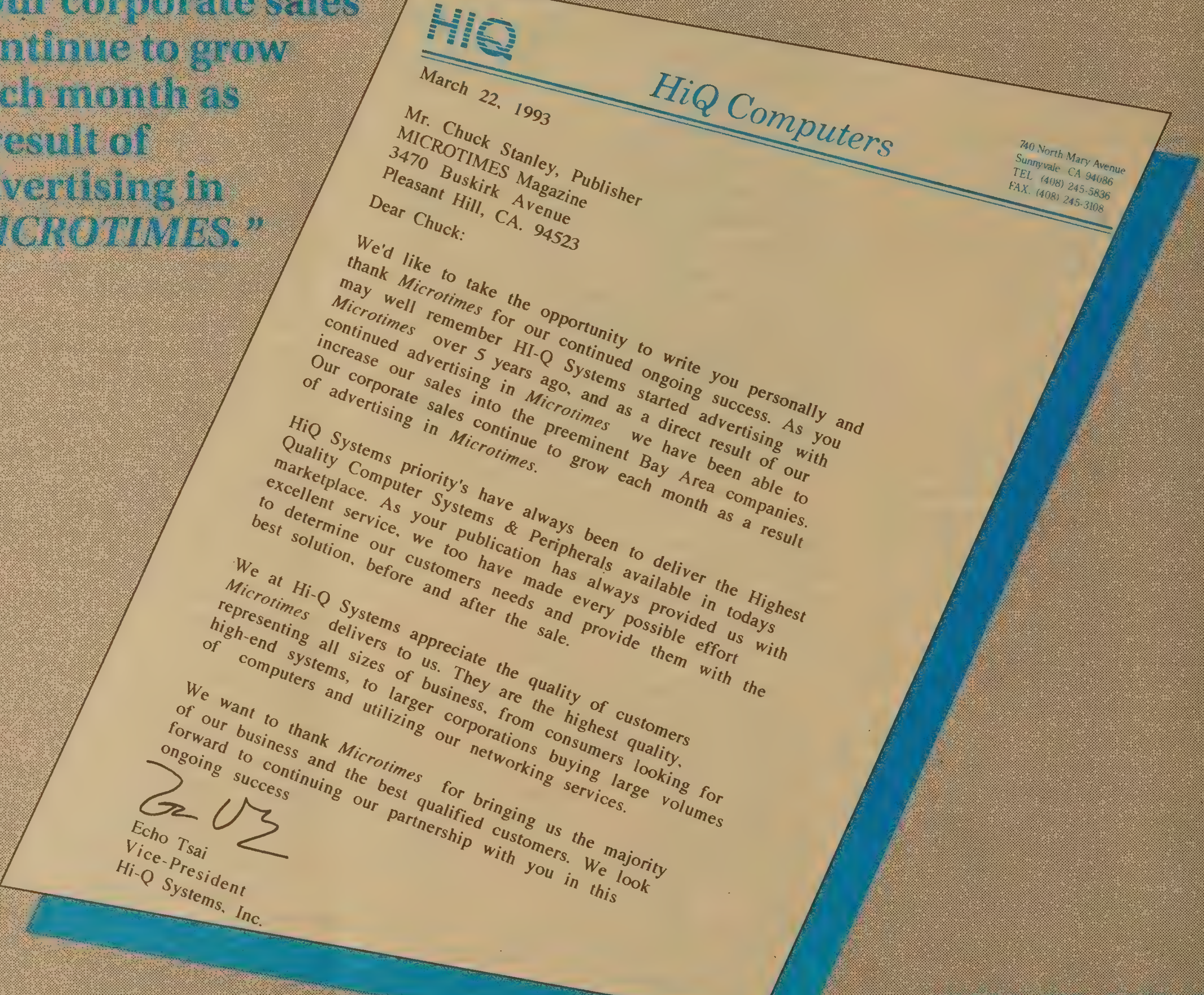

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utes. What was really happening was that we had a dialog box that wasn't really all that great in terms of informing the user exactly what the problem was when they couldn't do print merging.

"There were ten different possible problems that would occur, and cause this dialog box to pop up. And when the product support person was answering the phone call, they realized that there were at least ten reasons why it was screwing up, and they then had to go through ten iterations of this error message.

"What they found out through that effort was that when people were going through this process of print merging, what they were doing with the product was something actually quite different than what we had designed the product to do. We realized that we had to change the interfaces.

"We also found that a lot of people were calling who were experiencing trouble in charting. So when we were producing Excel 4, we changed the interface and created an introduction that stepped them through the entire process of charting instead of leaving it up to them to figure out how to chart things. That reduced our support calls a lot.

"We actively seek out customer input through different means," says Liu. "We have a thing called the Wish Line. If you call 206-936-WISH, you can call up and say what you would like to be dropped from or added to software products. The spell checker in Excel 4 got into the product as a result of calls to the Wish Line; it was the number-one requested item to have in our spreadsheet. We take the number of occurrences and stack-rank them, and we implement them one by one. For Mac Excel, we also put an ad in one of the Macintosh magazines that invited users to send in their wishes for the product.

"User input not only guides us in adding and refining features; users have even helped us determine valid needs for a new product category. There are some instances where we realize that we are missing a product and then we have to address that need. Our new database, Access, is a recent example of that. I would often go to seminars, and a lot of customers would say, 'You need a database! Please give us a Windows database!'"—one that would have the same "blood type" as Word and Excel.

REALITY CHECK

"Usability fixes are not really quick fixes," cautions Hobson. "They have to be thought about long in advance, they have to be really designed into the product. A lot of people have the misconception that at a beta test is where you make those fixes. But in reality, by the time you're at beta for a product, all you're looking for is technical fixes; places where you made mistakes in the code and sort of intricate problems. You're not making, and you're not able to make, big usability changes at that point."

"The number of people who have computers is getting larger and larger," says Ramey, "and that's a big accelerator on this thing, because the less computer experience they bring to the interaction, the less patient they are, and the less willing they are to put up with the way that computers currently have to work. Their idea is, 'Why should it work that way? I don't!'" ■

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NEW Quicken for DOS and Windows

Quicken Continues To Become Easier To Use, Offering Greater Flexibility In Arranging Your Data

BY ED KAHN

Quicken was introduced years ago as a basic checkbook management program. It now handles all of your financial matters—credit cards, mortgage payments, investments, and even cash payments—making it a strong financial management package. Each new release represents a significant improvement as Intuit continues to find new ways to make an already wonderful program even more useful. As modules have been added, each is smoothly integrated letting you easily track data from one part of the program to the next. At the end of the year, for instance, you can print out reports that will let you know exactly how much money you spent in categories such as medical payments, utilities, interest, or any other designation. When it is time to prepare your taxes, Quicken will lighten your workload by providing a wealth of information summarized and tagged for the right tax form.

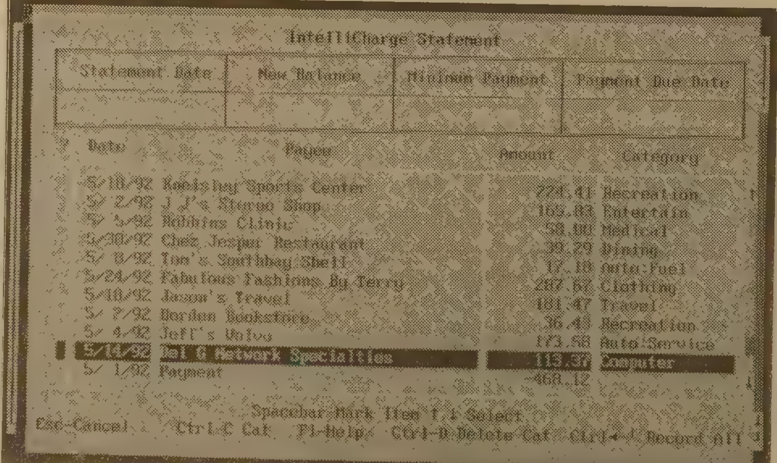
I found one bug in the program. It gave me an opportunity to check out the technical support facilities and I am happy to report that they kept working on the problem, until we found the solution.

Versions are available for DOS and Windows systems, as well as Apple II and Macintosh computers. The list price of $69.95 reminds me a little of Gillette's business philosophy of almost giving away the razor in order to sell the blades. While Quicken is available at ridiculously low prices, Intuit makes its money on support items like checks, window envelopes for the checks, deposit slips, and, now in the new version, a credit card that delivers your bill either on disk or by modem. The drawing card for this service is your charges are sorted into categories and entered into your Quicken system. In addition, the Quicken Visa card is free although billing is $3.00/month via modem and $4.50/month on disk.

Although Quicken is available for multiple platforms, the versions differ just enough to make it awkward to combine everything into a single review. This article focuses on some of the newest DOS and Windows features making these two upgrades (available for between $20 and $30, depending on the version) worthwhile.

QuickFill is standard in these new versions. As you begin to enter data, the program tries to anticipate what you will be entering and does the job for you. So if you begin to write a check to Bill Smith, as soon as Quicken feels it can make an educated guess about what the name will be, based on your past checks, it will fill in the data for you. As you keep typing, Quicken will continue to refine its guess until either it gets the right entry or you complete an entry it does not recognize. As you move between fields, Quicken will again try to guess the relevant information. You can, of course, override the guesses or turn off this feature.

Repetitive transactions can be grouped together so that a few keystrokes will enter a collection of data. This means that if you regularly write checks paying your mortgage, auto payment, and insurance premium, Quicken will automatically fill out each check and make the entries in your check register.



```
                    IntelliCharge Statement
 Statement Date | New Balance | Minimum Payment | Payment Due Date
                |             |                 |
  Date            Payee                       Amount  Category
  5/18/92 Kaeishay Sports Center              224.41 Recreation
  5/ 2/92 J J's Stereo Shop                   165.83 Entertain
  5/ 5/92 Robbins Clinic                       58.00 Medical
  5/30/92 Chez Jesper Restaurant               39.29 Dining
  5/ 8/92 Tom's Southbay Shell                 17.18 Auto:Fuel
  5/24/92 Fabulous Fashions By Terry          287.67 Clothing
  5/18/92 Jason's Travel                      181.47 Travel
  5/ 7/92 Borden Bookstore                     36.43 Recreation
  5/ 4/92 Jeff's Volvo                        173.58 Auto:Service
  5/14/92 Dal G Network Specialties           113.37 Computer
  5/ 1/92 Payment                            -468.12
              Spacebar-Mark Item ↑,↓ Select
Esc-Cancel   Ctrl-C Cat   F1-Help   Ctrl-D Delete Cat   Ctrl-↵ Record All
```

Overall, paying has also become easier. You can have Quicken fill out checks—which you can buy from Quicken precoded for your bank account and numbered according to your instructions. As checks are filled

continued on page 278

RESOURCES:
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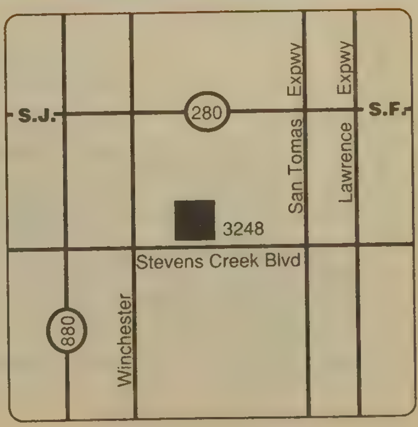

Entering The Internet

And Some Interesting Things To Do When You Get There

BY KEVIN M. SAVETZ

The Internet is a worldwide network of university, government, corporate, and private computers. Over a million machines are part of the Internet—no one knows exactly how many, because no one is in charge. This network is a cooperative, free, anarchistic entity. Internet users have hundreds of services at their disposal, including electronic mail, software downloading, databases to search, chat services, games, and bulletin boards on every imaginable topic.

Computers on the Internet communicate using a protocol called TCP/IP. A machine linked in this manner can exchange data with any other machine on the Internet.

The Internet's roots are in another network, the ARPANET, a group of United States military computers. The experimental ARPANET was developed in the late 1960s and 1970s by the Advanced Research Projects Agency, or ARPA. It was later divided into the ARPANET, designated specifically for research, and MILNET, for military use. Other computers were slowly added to the ARPANET, and other networks were folded in. Eventually, the ARPAnet as a distinct entity ceased to exist—and the Internet was born. Today, the Internet grows at a staggering rate, with an estimated four hundred networks connected to it. As the cost of network-accessing hardware falls, and universities and businesses provide net access to scores of people at a time, the people using Internet are the mass public in what is becoming our global village.

So, how do you get on the Internet? Probably your local bulletin board isn't part of the Internet; though it may have message systems and games and whatnot, it doesn't have "telnet" and "FTP" and other programs that allow you to get interesting information from computers elsewhere. Some commercial services like CompuServe and America Online let users send and receive electronic mail from the Internet, but lack file transfer capabilities.

In order to use the Internet, you need an account on a computer that is connected to it. You use your modem to dial into the service and access your account. Several companies provide accounts for a fee, charging either per-hour or a flat monthly rate. Some universities give accounts gratis to students and faculty. It's best to find a service that's accessible with a local phone call, to keep your phone bill manageable. Some services allow nationwide access through a data network such as Tymnet, but these networks carry an added hourly surcharge. Take the time to find a system that is nearby and within your budget.

Copyright © 1993 by Kevin Savetz. All rights reserved. Kevin Savetz is a recent college graduate. He needs a job. His email address is "savetz@rahul.net".

COMMERCIAL SERVICES: A SAMPLER

Dozens of commercial services nationwide provide Internet access for a price. Space does not permit listing them all; however, here are a few companies that provide Internet accounts in the Bay Area:

A2I Communications offers accounts with access to a UNIX shell, electronic mail, FTP, telnet, and Usenet news. A2I charges a flat fee of $20 a month, but offers discounts if bought in advance: $45 for three months or $72 for six months. There is no sign-up fee or connect-time charge. To access it, dial (408)293-9010 if your modem is v.32 or v.32 bis, or (408)293-9020 if not. Login as "guest."

CERFnet offers accounts to individuals and entire organizations with multiple users. Fees start at $20 a month and $3 hourly for off-peak calling, with a $50 one-time installation fee. Users can call in from the local area, or using a nationwide 800 number for an extra fee. For information, call (619)455-3900 or 1-800-876-2373.

The videotext service **DELPHI** just added Internet capability in January. The service, which already had a broad base of users, says it is the first nationwide service to provide full Internet access, including electronic mail, FTP and telnet. DELPHI has two membership plans: the "10/4" plan costs $10 per month and includes four hours of use; additional use is $4 per hour. The "20/20 Advantage" plan is $20 per month, includes twenty hours of use, and costs $1.80 per hour for additional time. Rates apply for access speeds up to 2400bps; 9600bps access is currently being tested in some locations. The Internet service option costs an extra $3 per month and allows users to transfer 10MB of data. DELPHI access during business hours via Sprintnet or Tymnet carries a surcharge.

Through a trial membership offer, anyone interested in trying to learn DELPHI and the Internet can receive five hours of access for free. To join, dial by modem, 1-800-365-4636. After connecting, press return. At the "Username:" prompt, enter JOINDELPHI and at the password prompt, type INTERNET. If you have questions, call 1-800-695-4005.

From Berkeley, **Holonet** features email, telnet, FTP, Usenet, and IRC, as well as other services. Holonet costs $6 per month plus $2 an hour (off-peak) or $4 an hour (prime time) plus network surcharges for those not using the Berkeley access number. Happily, the monthly fee goes toward the hourly charge. Holonet is available for $60 annually, a $12 savings over the month-to-month rate.

Although some online services charge extra for users of fast modems, Holonet charges based on how much you download—so those with fast modems can "browse" without feeling rushed. The data transfer charge is $1 per megabyte during off-peak hours; $2 per hour in prime time. Those who keep more than 100K online are charged an additional $1 per megabyte per month storage fee. Call (510)704-0160 (voice) or (510)704-1058 (modem).

Of the services listed here, **Netcom Online Communication Services** offers local-call access from the widest area, covering San Francisco, Santa Cruz, Los Angeles and San Diego. The service, which offers a UNIX shell, FTP, telnet, IRC, Usenet feeds and other services, costs $19.50 per month, plus a one-time signup fee of $15. For information, call (408)554-8649 (voice) or login as "guest" using one of the modem dialups: (310)842-8835, (408)241-9760, (408)459-9851, (415)328-9940, (510)426-6860, (510)865-9004, or (619)234-0524.

The Portal System, with dialups in Cupertino and Mountain View, charges a monthly fee of $19.95, with a signup charge of $19.95. An additional charge of $1 per megabyte per month is imposed on those storing large amounts of data.

To get information about Portal online, dial (408)725-0561 or (408)973-8091 and login as "new" or "help". If you prefer to talk to a human, call (408)973-9111. This service is also available nationally over SprintNet and Tymnet, at an additional cost from $2.50 to $10 an hour. Portal offers a UNIX shell as well as a menu-based interface (if UNIX scares you), FTP, telnet, IRC, Usenet feeds, and other services.

The Whole Earth 'Lectronic Link, or **WELL**, is one of the best-known Bay Area commercial computing services. It offers a UNIX shell, electronic mail, FTP, telnet, Usenet, and other services. The service costs $15 a month, plus $2 an hour. Long-distance usage through the CompuServe Packet Network costs an additional $4 per hour.

To sign up online, dial (415)332-6106 and login as "newuser". (Callers from out of the area may wish to use the Packet Network: call

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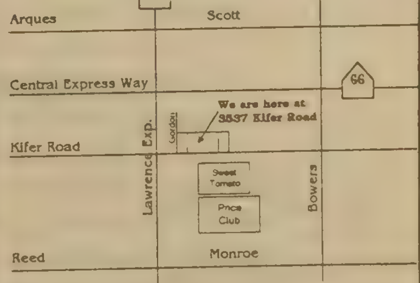

1-800-848-8980 to find the nearest CPN number, then call that number and enter "WELL" at the prompt.) The WELL's voice information line is (415)332-4335.

If you are a college student or faculty member, check with your campus computer center to learn about the online facilities available to you. Many schools, including California State University and the University of California, offer free accounts to students and staff. The Free Software Foundation at Massachusetts Institute of Technology sometimes provides free UNIX accounts as well. However, the FSF is in the business of writing software, not handing out free computer accounts. It may take months to get an FSF account.

Computer accounts are not all alike. A vast assortment of machines—from tiny personal computers to huge mainframes—are on the net. Not every service provides access to the same functions. For instance, while many sites offer FTP, a program that allows you to download software from other computers, some sites do not, for security reasons or disk-space limitations.

Once you have an account on an Internet-linked computer, you use various programs as tools for communicating with people and services elsewhere. While this is not meant to be a complete Internet tutorial (whole books have been written for that) it is meant to get the Internet-novice going in the right direction.

ELECTRONIC MAIL

Electronic mail, or email, allows users to send messages from one computer to another in a manner of moments. Typically, a coast-to-coast email message can arrive at its destination in as little as one minute.

There are too many different electronic mail software packages to cover here, so ask around at your system for the details. Usually, an electronic mail "address" is in the form "user@computername.location". For instance, if your username (or login name) at the WELL is "fjones," you can receive email at "fjones@well.sf.ca.us."

TELNET

Telnet is a program that allows you to login to another computer to run software there. Typically, you login either to access a "shell" command environment or some other utility.

To telnet to a computer, you need to know its name. This can either be in words, like "steer.sdsu.edu" or as a numeric address, like "130.191.1.11". Some services require you to connect to a specific "port" on the remote computer. Type the port number, if there is one, after the Internet address. (For example, "telnet nri.reston.va.us 185".)

When you connect to the remote computer, you will usually be asked for a login name. This isn't the same as the login to the account you are telneting from—instead, you usually need to enter the name of the service you wish to access. For example, you might login as "bbs" if you know that a certain computer offers a public bulletin board service.

If your system has manual pages installed, type "man telnet" and "man ftp" for online documentation specific to your system.

ANONYMOUS FTP

Some systems provide a program called FTP, which stands for file transfer protocol. FTP allows you to copy files from a remote computer to your local host. Thousands of sites provide anonymous FTP service, allowing you to download everything from online books to satellite pictures of the weather to public-domain utilities and games for your personal computer. (Software for use on your home computer first needs to be FTPed to your local host, then downloaded to your PC using XMODEM, ZMODEM, Kermit, or some other system—a two-step process.)

FTP works similarly on most systems. To access a remote site, type "ftp" followed by the name of the computer. A good place to start is with "ftp wuarchive.wustl.edu". Wuarchive contains a vast selection of programs for UNIX, IBM, and Macintosh computers.

Once FTP connects to a remote site, you will be asked for a username. Type "anonymous" as a username and enter your electronic mail address for the password. This is done as courtesy to the system administrators, who need to know who is using their system. On some sites, "ftp" works as the anonymous username. The anonymous FTP system provides file access for people who don't actually have an account on a remote computer.

Note that not every site permits anonymous FTP access—don't try to access a system that hasn't been billed as a public FTP server.

If the site you are FTPing to allows anonymous access—and everything goes as planned—you should be greeted with a message like "Guest login OK." You then have a number of UNIX-like commands available to you—use these to change directories, list files, set the file type and download files to your local host. Standard commands include: "help"; "ls" to list the files in the current directory; "cd" to change the directory; "binary," which tells the computer that you expect to download binary files; "ascii," which tells the computer you will be downloading text files; "get <filename>" makes a copy of the remote file on your local host; "quit" ends the FTP session.

Usually, there is a directory called "pub" where public files are stored. Type "cd pub" then "ls" to list what's available. You may wind your way through several directory levels before finding what you're looking for. For instance, on wuarchive, anti-virus software lives in "mirrors/msdos/trojan-pro".

TO LEARN MORE

Books for beginning to advanced Internet users are available—they can provide detailed information from how-tos to detailed technical explanations of the net.

Check out *The Whole Internet* by Ed Krol (published by O'Reilly & Associates) and *Zen & the Art of Internet* by Brendan Kehoe. Both books are aimed at the first-time user, covering the basics of the Internet, and lead into more advanced topics.

Also available is *The Internet Companion, A Beginner's Guide To Global Networking* by Tracy LaQuey with Jeanne C. Ryer (Addison-Wesley Publishing). The *Companion* includes a detailed history of the Internet, a discussion on "netiquette" (network etiquette), and how to find resources on the net.

Early this year, McGraw-Hill will release *The Internet Guide for New Users*, by Daniel P. Dern. Along with the obligatory topics such as telnet, FTP, and Archie, the book suggests how to get an Internet account and teaches enough UNIX skills for survival on the net.

Once you have an account, several good texts are available by FTP. "The Internet Companion," a beginner's guide to the net, is available by FTP from "world.std.com" in directory "/OBS/The.Internet.Companion". While you're there, download "zen-1.0.txt.Z" from the directory "/obi/Internet/zen-1.0"—this is an old, free version of Kehoe's book *Zen and the Art of Internet*. (Files that end in .Z need to be uncompressed with the Unix "uncompress" command before reading.)

Users who are more interested in the technical bits of the Internet will want to read *The Hitchhiker's Guide to the Internet*. This document, also written by Ed Krol, explains how Internet addresses work and discusses issues such as trust and carrying capacity of the Internet. The "Guide," as well as other useful texts for new users, is available from "wuarchive.wustl.edu" (128.252.135.4) in directory "/mirrors/EFF/internet-info."

FURTHER ADVENTURES AND USEFUL INFO

There are a lot of useful things you can do with the Internet. People and organizations have set up servers offering the public everything from daily stock exchange updates to

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Ethernet 8 bit/16bit	59/71

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486SX-25/33 (CYRIX)	155/175
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486DX-50 64K	520
486DX2-66 64K	620

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Viewsonic 6E	320
Sony 1304 (Non-Int)	560
NEC 4 FG	725

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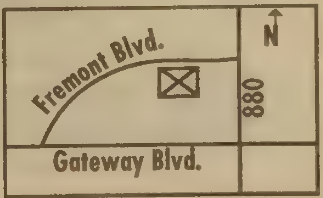

nuclear test data.

Here is a sample collection of Internet-accessible sources of useful information about the weather, geography, space, food and agriculture, and research tools. Most of these services are accessed using either telnet or FTP on your local computer. Telnet puts you in an interactive shell with a program at a remote site, while FTP allows you to download information or pictures for viewing on your local machine.

Weather And Geography: What could be more useful than up-to-date weather information? The University of Michigan runs a public service, the Weather Underground, with enough information to put Willard Scott to shame. To access it, "telnet downwind.sprl.wmich.edu 3000" or "telnet 141.212.196.177 3000". The service prompts you for a three-letter city code (for example, EKA for Eureka, California) then speedily delivers a daily forecast for that area. (Rain, and lots of it!) It contains weather information for the United States, Canada, and some international cities.

The Weather Underground also provides climate data for any United States or Canadian city, including 24-hour rainfall, total and average rainfall for the season, and record high and low temperatures. Here, too, you can search for information by the three-letter city code. Long-term forecasts, earthquake reports, hurricane advisories and marine forecasts are also available.

Not to leave well enough alone, the University of Michigan also offers a geographic server. Just "telnet martini.eecs.umich.edu 3000" or "141.212.99.9 3000", and enter the name of a city or its ZIP code. You'll find out the city's name, population, latitude and longitude, elevation, location, etc.

A short listing of recent earthquakes, date and time, including magnitude, location, and depth, is available with the command "finger quake@geophys.washington.edu" (or "finger quake@128.95.16.50").

An auroral activity monitor is another service accessed using "finger" command. Use "finger aurora@xi.uleth.ca" or "finger aurora@142.66.3.29" for information about auroral sightings, warnings, and watches.

Some of us would rather look at the weather. If your computer can display GIF-format pictures, you can view striking up-to-date weather pictures. FTP to vmd.cso.uiuc.edu (128.174.5.98), login as "anonymous," change the directory to "wx" and use binary mode. You can then download satellite images of the earth and her weather. Visible and infrared images from the GEOS-7 satellite over the US and Mexico are available for the downloading, and are updated frequently. Surface analysis maps are also available.

The "wx" directory also contains useful documents, including "spotfreq.doc", listing amateur radio frequencies with weather information, and "chase-tv.doc" which lists television stations that provide useful information for storm chasers. Additionally, "wx-talk.doc" gives information about weather-related mailing lists on the Internet.

GEOS images over North and Central America are also available by anonymous FTP from ats.orst.edu (128.193.120.19). Satellite GIFs of Europe from Meteosat are updated twice daily at cumulus.met.ed.ac.uk (129.215.168.19.)

For more information, a guide to weather images, data, and meteorological, oceanographic, and geophysical research data is available by sending electronic mail to pit-manager.mit.edu. Include "send usenet/news.answers/weather-data" in the body of the message. You will receive a file detailing where to find information on the internet, on CD-ROM, and in mailing lists. However, most of the sources mentioned in the text are aimed at the scientific community.

Space: NASA offers a "headline news" service, including daily press releases and updates on space shuttle missions. To read it,

continued on page 274

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486-50C ISA	632			988	1023	1058	1093
486-33C ISA	364			720	755	790	825
486SX-25C ISA	365			721	756	791	826
386-40/64C	305			659	694	729	764
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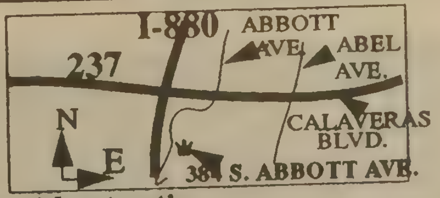

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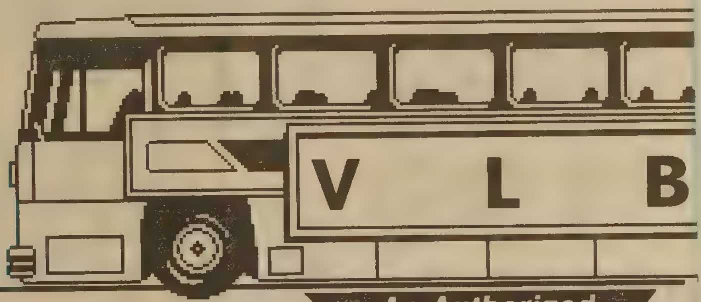

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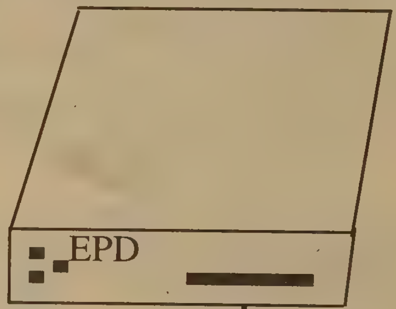

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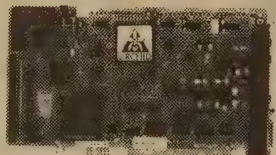

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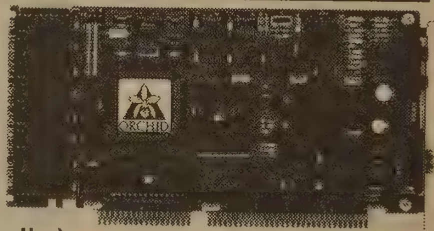

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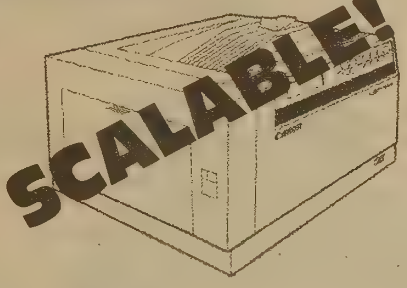

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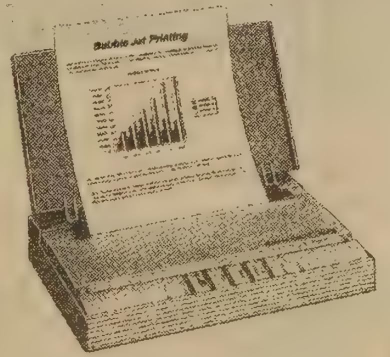

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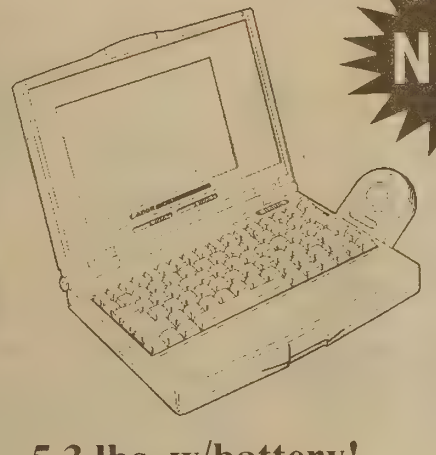

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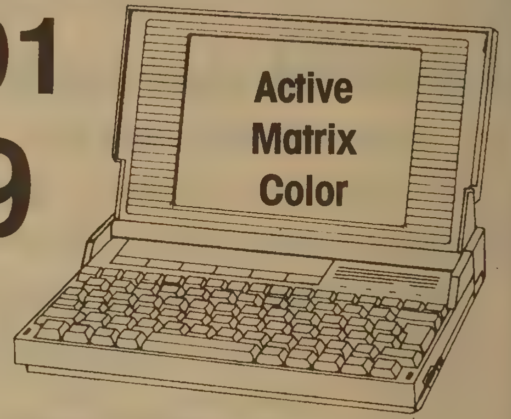

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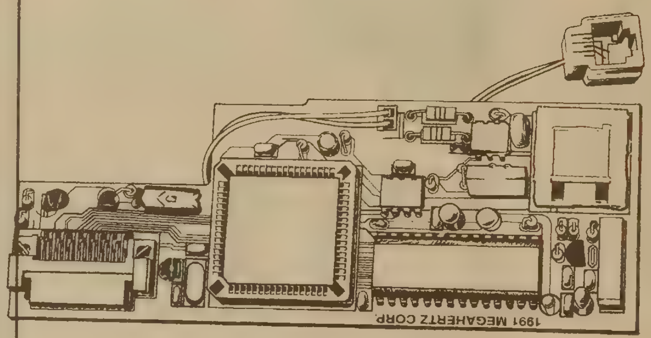

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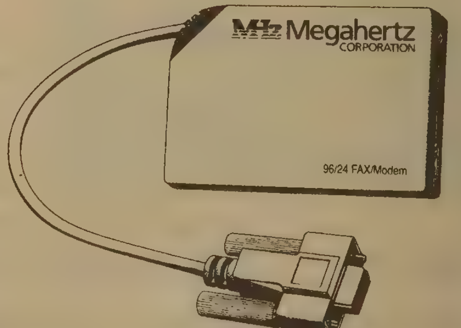

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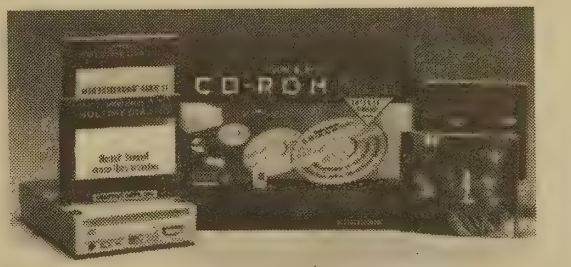

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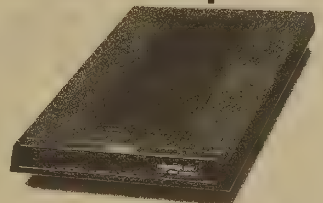

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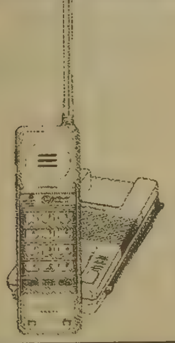

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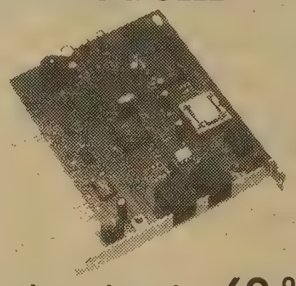

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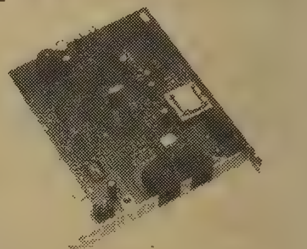

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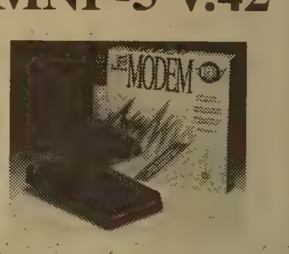

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- Call progress monitoring
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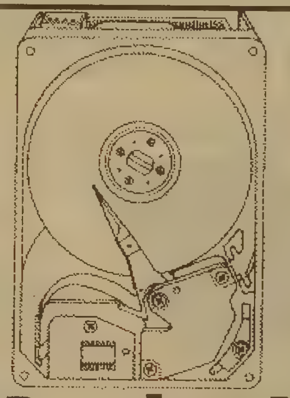

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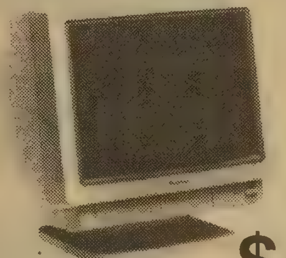

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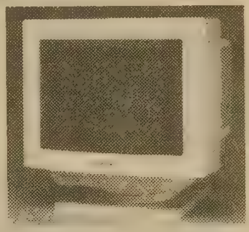

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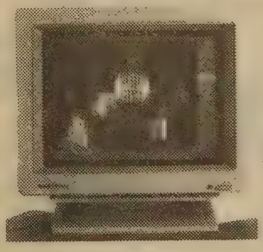

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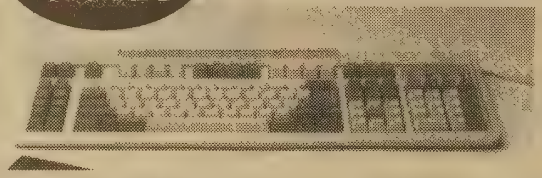

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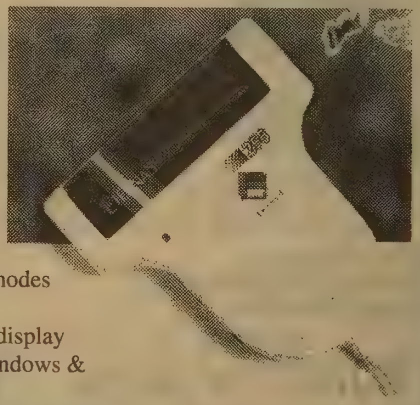

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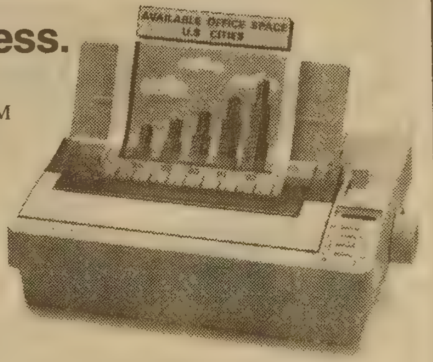

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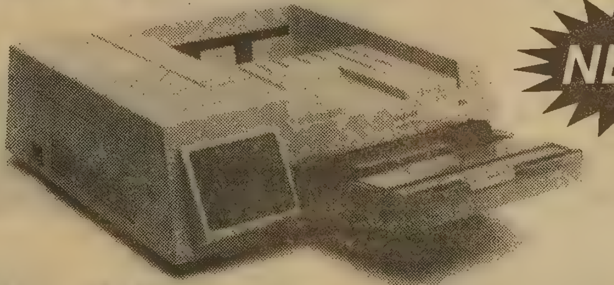

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PC Magazine® Editors' Choice.

$599

- Industry's best warranty: 5 years on printhead, 1 year parts/labor on printer
- PC Magazine Editors' Choice- June 12, 1990
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- HP® Series II compatible
- Design fits any desktop

OL810.
With OKI Smoothing Technology™
PCL-5 Scalable Fonts

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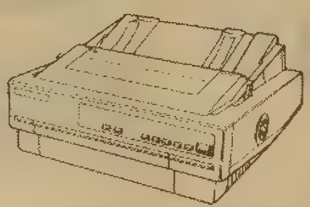
EPSON SCALABLE FONTS • ENHANCED GRAPHICS



LQ-570 $239

- 24-pin, 315cps
- 12 built-in fonts
- 2 year warranty

LQ-1070 $359

- 24-pin, 315cps
- **WIDE Carriage**
- 2 year warranty

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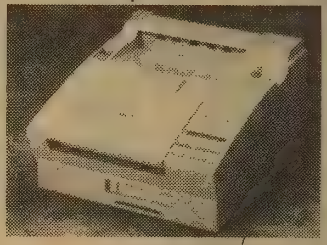
LQ-510 FREE Multi-font Module	$219	LX-810 *9-pin 80 column*	169
LQ-870	469	LQ-2550 *24-pin 400cps*	899
LQ-1170	599	FX-870/1170 *NEW*	269/359
		DFX-5000 *9-pin 530cps*	1299

ActionLaser 1000

NEW!

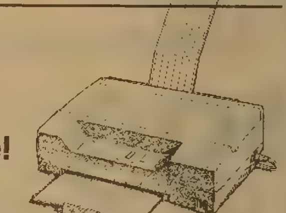


- 6ppm
- 512K Ram exp. to 6.5MB
- 14 standard fonts
- 1 cartridge slot
- 150-sheet universal tray
- HP IIP, PCL-4 emulation
- 2 year warranty

$689

ActionLaser 1500 PCL-5 $829

ActionPrinter AP-3250 24-Pin



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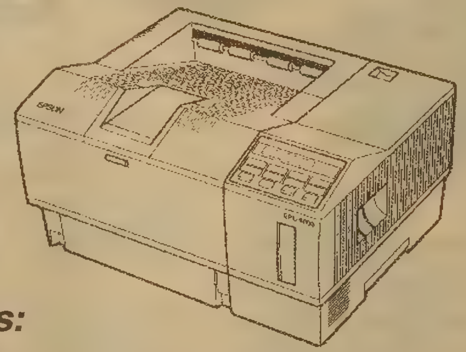

Great Features Such as:
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-Printer Sharing
-And More...

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- 10ppm
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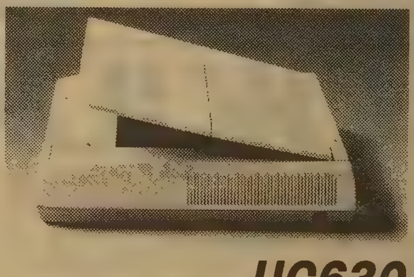

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- PC-Source-April 1992

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Great for all your desktop publishing needs!

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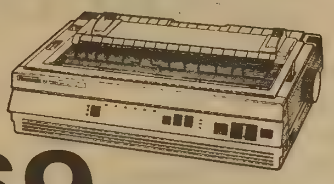

- 24-pin
- 240cps, 63cps LQ
- 7 built-in fonts
- 2 year warranty

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KX-P1124i	24-pin ,300cps, 8 built-in fonts	$219
KX-P2123	24-pin, 240cps, color capable	199
KX-P2180	9-pin, 240cps, quiet series	139
KX-P2624	24-pin, 300cps, quiet series	299

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IIP *Plus*	4ppm, PCL-4	799
IIIP	4ppm, PCL-5	969
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IIID	8ppm, dual tray, PCL-5	2295
IIISi	17ppm, auto interface switch	3399

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It doesn't Scream, ...
it whispers.

Panasonic
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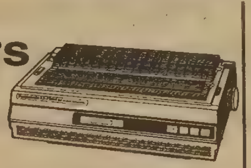
The *QUIET* Series Printers



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KX-P2023
- 24-pin matrix, Non-color
- 240cps, 80cps LQ
- 7 fonts, (43.5 dBA)
- 2 year warranty

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- 240cps, 64cps LQ
- 6 fonts, paper parking
- 2 year warranty

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- 320cps, 85cps LQ
- 8 fonts, 360x360
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- 11 fonts, 26K buffer
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KX-P1124i	289	KX-P1624	348

KX-P4455
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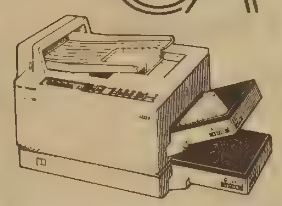

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POSTSCRIPT

- 2MB RAM exp to 4MB
- Two 250 sheet paper trays
- 39 PostScript fonts • 11PPM

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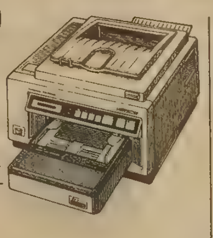
4455/4450i

Legal Tray	$49
Envelope Tray	.69
Toner	39
Drum Unit	149
Developer	99

KX-P4450i $1098

KX-P4430
Laser Printer

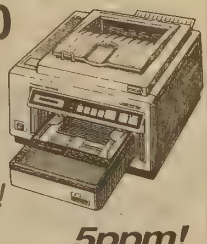


Scalable Fonts!

$849

- 1MB RAM exp to 5MB
- **PCL-5 Scalable**
- 300 dpi resolution • 5 PPM
- 200 sheet paper capacity

KX-P4410
Laser Printer



FREE Adobe Type Manager!

5ppm!

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- 200 sheet paper capacity
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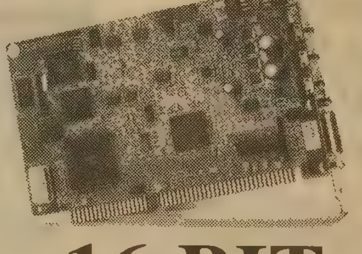
LOGITECH

SOUNDMAN 16



Highest Fidelity Sound Available:
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- Sampling/playback rate 2KHz-44KHz
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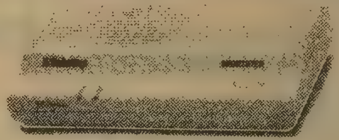

The Easy-To-Use Modem for People Who Think Like The Pros.

Sportster 14,400 Fax Modem
CCITT V.32 bis with V.42 bis

- Asynchronous, full-duplexing communications from 14,400 to 300bps:
-CCITT V.32 bis at 14,400/12,000bps
-Additional CCITT and Bell compatibility with 2400/1200/300 dial-up modems
-CCITT V.25 for calls originating outside the U.S. and Canada
- Error control (both CCITT V.42 & MNP 2-4)
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- Auto-Answer/Auto-Dial
- Nine LED status lights

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Lowest Prices Ever!

Internal	$209
External	229
External MAC version	245

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MouseMan™
High Resolution Serial PS/2 Mouse

Don't be caught with a dying mouse!

- 400dpi resolution
- Three programmable button flexibility
- New ergonomic design
- Enhanced MouseWare™ Utilities
- Windows™ 3.1 compatible
- IBM PC, XT, AT, PS/1, PS/2 compatible

#PMS015

TrackMan™
High Precision Stationary Mouse

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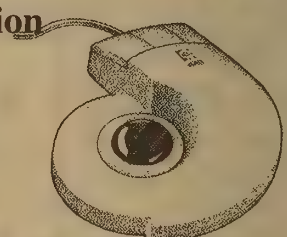
Designed for Comfort and Precision



- Three programmable button flexibility
- New ergonomic design
- Enhanced MouseWare™ Utilities
- Guaranteed to work with all Windows™ and DOS applications

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Hand-Held Color Scanner

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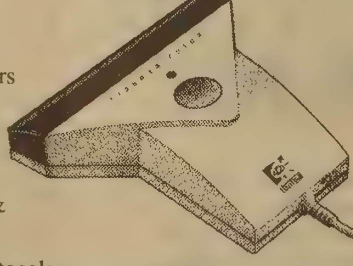
Add the Impact of Color!



- 24-bit hardware, captures 16.8 million colors
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- Saves images in TIFF, BMP, PCX, JPEG & EPS formats
- Supports Windows™ (OLE) & TWAIN protocols

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TrackMan™
Portable Mouse

Superior Performance

See and feel the difference

- Small, lightweight and portable, three-button support
- Made to travel, includes sturdy casing & padded case
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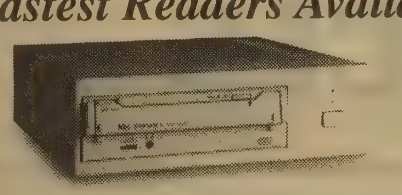

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World's only CD-ROM Readers with MultiSpin.™

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READY 486 Computers

486DX
33MHz
$1838

- i486SX-25MHz w/4MB RAM exp to 64MB
- Large capacity 170MB hard drive
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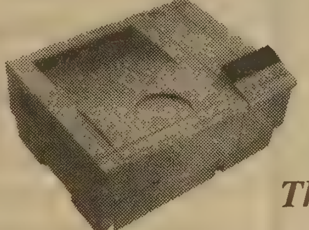
- 96S/48R fax, 24SR modem w/Prodigy Kit
- DOS, Win, Desktop, WindowWorks & Quicken
- 5.25" & 3.5" floppy & NEC mouse included

486sx25 ....$1538



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Silentwriter® 95

$1149*

In-Store Price $1399

- 6 PPM, 2MB RAM exp. to 5MB
- 35 scalable Adobe fonts
- 14 bitmap & 8 scalable HP fonts
- HP LaserJet III w/PCL-5 emulation
- Auto Interface Monitoring for easy sharing

*Price reflects a $250 end-user mail-in rebate, some restrictions apply, valid thru Apr. 30, 1993

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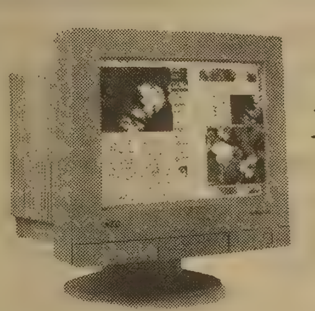
MultiSync® 4FG Color Monitor



Exclusive AccuColor Control for adjusting Colors!

- 15" flat square high contrast CRT
- .28mm trio dot pitch
- 1024x768 resolution non-interlaced
- 75MHz maximum video bandwidth

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3FGx	15". .28mm, 1024x768, N/I	$649
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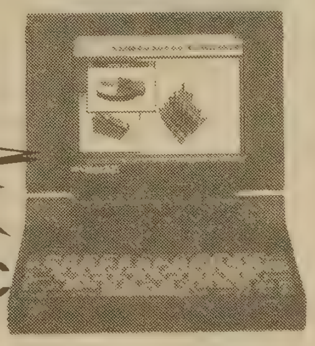
UltraLite® Versa™ 25C

NEW!



The UltraLite® Versa™ 25C

-Built-in Local Video Bus

-Accepts PCMCIA Cards

-Removable Screen & HDD

$3995

- i486SL processor w/25MHz
- 4MB RAM exp to 10MB
- Large capacity 180MB hard drive
- Brilliant color SVGA TFT active matrix display
- 64KB cache for enhanced performance
- Upgradable to pen system
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Great Colors!

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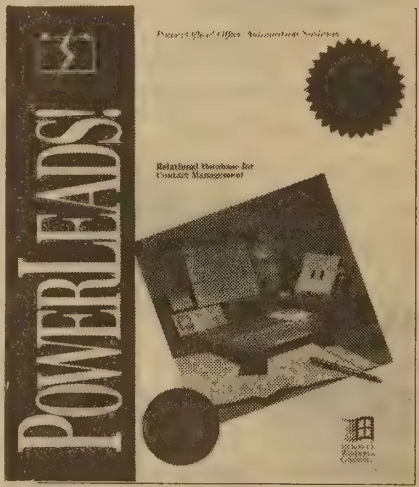
New Products

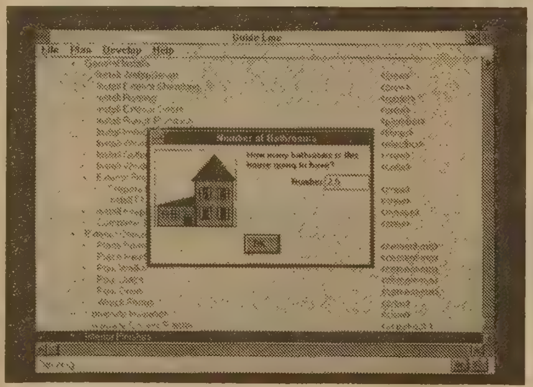
PC SOFTWARE

POWERLEADS! 1.11



PowerLeads! is an easy-to-use, flexible contact management and sales lead tracking system that runs under Windows. It uses a feature-rich relational database to keep track of clients, calls, schedules, priorities, and expenses, and almost all of its power can be controlled and accessed from a single screen. PowerLeads! offers auto-dialing, mail-merge to Word for Windows, Ami Pro, and ProWrite Plus word processors, and a convenient mailing lable generator that includes eight different Avery lable formats. The built-in autodialer can use pre-programmed calling card numbers, and internal and international dialing access codes. It even knows to automatically take out the area code when dialing local calls. The new version adds a Contact Log that maintains a separate database of activities, such as calls, messages, meetings, and letters, for all contacts. ($295) Pyramid Data, Inc., 1650 S. Amphlet Blvd., Suite 212, San Mateo, CA 94402. 1-800-972-7972.

SYMANTEC GUIDE LINE AND GUIDE LINE MAKER



Guide Line is an intelligent, interactive application that builds project schedules based on simple user input. These schedules work with any of Symantec's desktop project management packages—Time Line for Windows, Time Line 5.0 for DOS, and On Target—as well as Microsoft Project for Windows. Guide Line contains sixteen guides including contruction, office relocation, LAN installation, software development, consulting, small-business start-up, a marketing play, and a general project plan. Guide Line Maker is an authoring system that lets users build their own project management guides, either from scratch or by importing previously created project schedules. (Guide Line is $149.95; Guide Line Maker is $499) 10201

Continued

PRODUCT UPDATES

➤**Compton's New Media** announced that consumers will have the opportunity to **trade in** any CD-ROM encyclopedia for Compton's Interactive Encyclopedia featuring Virtual Workspace. Compton's New Media, 2320 Camino Vida Roble, Carlsbad, CA 92009. (619)929-2500.

➤**Dantz** released **Retrospect 2.0** and **Retrospect Remote 2.0**, significant new versions of its Macintosh backup products. Dantz Development Corp., 1400 Shattuck Ave., Berkeley, CA 94709. (510)849-0293.

➤**Fractal Design** has extended its **customer support** capabilities by opening two new online bulletin boards for Macintosh and Windows users. Customers can now ask questions, upload and download files, and get the latest news from Fractal's forums on America Online and CompuServe. Fractal Design Corp., 335 Sprekels Dr., Suite F, Aptos, CA 95003. (408)688-5300.

➤**Frame Technology** released **FrameMaker** and **FrameViewer 2.1** with native support for Univel's **UnixWare** and SunSoft's **Solaris**. Frame Technology Corp., 1001 Rincon Cr., San Jose, CA 95131. (408)433-3311.

➤**Gupta Corp.** announced **Gupta SQLWindows 4.0**, a significantly enhanced version of its client-server application development tool for SQL databases. Gupta Corp., 1060 Marsh Rd., Menlo Park, CA 94025.

➤**MapInfo** released **MapInfo 2.1 for Windows**, its desktop mapping software, along with **MapBasic 2.1**, an upgrade to its programming language for custom desktop mapping applications. MapInfo Corp., 200 Broadway, Troy, NY 12180. (518)274-6000.

➤**MathSoft** introduced **Mathcad 4.0**, a major upgrade featuring Smart Math, a rules-based processor that makes numeric and symbolic calculations faster, easier, and more accurate. MathSoft, Inc., 201 Broadway, Cambridge, MA 02139-1901. (617)577-1017.

➤**OptImage** announced the availability of **CD-I MediaMogul 1.2**, an upgrade to its non-programming CD-I authoring system and **Script to Disc 2.1**, an upgrade to its CD-I premastering software. OptImage Co., 1501 50th St., Suite 100, W. Des Moines, IA 50265-5961. (515)225-7000.

➤**Shiva Corp.** is bundling Apple Computer's **AppleTalk Remote Access** client software with **LanRover/L** and **LanRover/E for AppleTalk Remote Access** remote networking servers. Shiva Corp., Northwest Park, 63 Third Ave., Burlington, MA 01803. (617)270-8300.

➤**Ventura Software** announced a maintenance update to three of its recently released Windows-based desktop Publisher's Tools: **Ventura Publisher 4.1, Ventura DataBase Publisher 4.0, and Ventura AdPro 1.1.** Ventura Software, Inc., 15175 Innovation Dr., San Diego, CA 92128. (619)673-0172.

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SERVICE, SERVICE, AND MORE SERVICE!

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SUPERBOARD 486 VESA LOCAL BUS SYSTEM WITH 256K CACHE

- 4 MB RAM Exp. to 32 MB
- 2 32-Bit Local Bus Slots
- Med Tower Case/Power Supply
- Super IDE/VLB Controller
- TEAC 1.2 MB Floppy Drive
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- MAXTOR/CONNER 200 MB HD
- Serial/Parallel/Game Card
- Orchid Fahrenheit VLB Card
- Super VGA 1024x768 Non-Interlaced Color Monitor
- 101 Keyboard
- MS DOS 5.0

486DX-33 *$1835*

486DX-50 *$1977*

486DX2-66 *$2099*

MICRONICS COMPUTERS INC

486 VESA LOCAL BUS SYSTEM WITH 256K CACHE

- 4 MB RAM Exp To 64 MB
- 2 32-Bit Local Bus Slots
- Med Tower Case w/Power Supply
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- TEAC 1.2 MB Floppy Drive
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- MAXTOR/CONNER 200 HD
- Serial/Parallel/Game Card
- Orchid Fahrenheit VLB Card
- Super VGA 1024x768 Non-Interlaced Color Monitor
- 101 Keyboard
- MS-DOS 5.0

486DX-33 *$1945*

486DX-50 *$2077*

486DX2-66 *$2177*

486 VESA LOCAL BUS SYSTEM WITH 256K CACHE

- 4 MB RAM Exp To 32 MB
- 2 32-Bit Local Bus Slots
- Med Tower Case w/Power Supply
- Super IDE/VLB Controller
- TEAC 1.2 MB Floppy Drive
- TEAC 1.44 MB Floppy Drive
- MAXTOR/CONNER 200 HD
- Serial/Parallel/Game Card
- VLB VGA Card
- Super VGA 1024x768 Non-Interlaced Color Monitor
- 101 Keyboard
- MS-DOS 5.0

486DX-33 *$1699*

486DX2-66 *$1929*

VIDEO CARDS

ORCHID P9000/VLB	$465
ORCHID FAHRENHEIT VA/VLB	239
ORCHID FAHRENHEIT VLB	215
ORCHID FAHRENHEIT 1280 PLUS	175
DIAMOND SPEEDSTAR 24X	159
DIAMOND STEALTH PRO 1MB	285
DIAMOND STEALTH 24VLB	215
DIAMOND STEALTH PRO VLB	285
DIAMOND VIPER VLB	465
MATROX IMPRESSION 1024	695
MATROX IMPRESSION ULTRA	3445
ATI GRAPHICS ULTRA PRO VLB	595

MONITORS

VIEWSONIC 17" .28mm	$1199
VIEWSONIC 20" .28mm	1790
VIEWSONIC 21" .28mm	2229
VIEWSONIC 6FS 15" .28mm 72Hz	535
VIEWSONIC 7 17" .28mm 72Hz	949
NANAO F550i 17" .28mm 1280x1024	1149
NANAO F340i 15"	725
NEC 4FG/5FG	785/1279
MAG 15F 15"	575
MAG 17F 17"	1085

FLOPTICAL DRIVES

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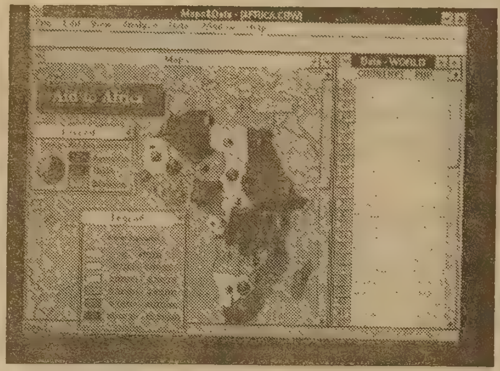

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FRAMZ

This package of frame designs for PageMaker 4.2 & 5.0 users includes one hundred frame designs in categories such as straight lines, box patterns, box and line combinations, rounded corner coupons, arrows, scrolls, symbols, holiday, and seasonal. It is installed by simply adding it to the Aldus Additions folder, making FRAMZ available under the Aldus Additions menu choice. ($99) Shade Tree Marketing Corp. 1-800-678-8848.

TELEFINDER 3.0

TeleFinder Group Edition v3.0 Macintosh BBS software includes the BBS host program, user access software with unlimited distribution license, and full documentation. Capable of managing up to thirty-two thousand users, TeleFinder delivers a powerful communications tool to businesses, information providers, schools, and nonprofit groups. Its icon- and menu-based GUI provides easy-to-use email, conferencing, and fast Zmodem transfers. ($425) Spider Island Software Corp., 4790 Irvine Blvd., Ste. 105-347, Irvine, CA 92720. (714)669-9260.

DUPLOCATOR

DupLocator brings together files scattered across multiple disks (such as floppies, removables, shared network volumes, or hard drives) in one powerful step, building a comprehensive list of files. Files sharing the same names are simultaneously determined as being duplicates and added into a separate listing. The lists can be easily manipulated through the use of a set of tools—you can sort, sift, identify, delete, move, copy, compare, catalog, compress, and even change file attributes. ($99) Midnight Software, Inc., 351 W. Davis Ave., Littleton, CA 81020-4207. (303)730-3376.

BOOKS

MICROSOFT WORD 5.1 FOR THE MACINTOSH MADE EASY

The Introduction to *Microsoft Word 5.1 for the Macintosh Made Easy*, by Paul Hoffman, says that "it discusses both the essential and unique features of Word and provides practical suggestions for putting Word to

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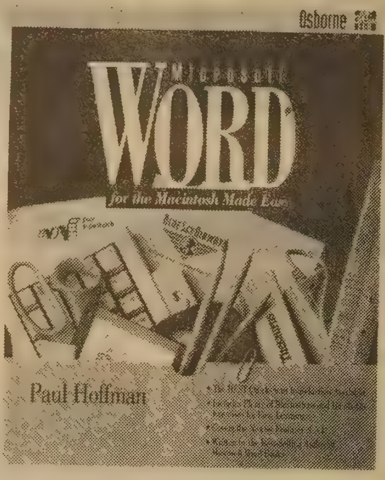
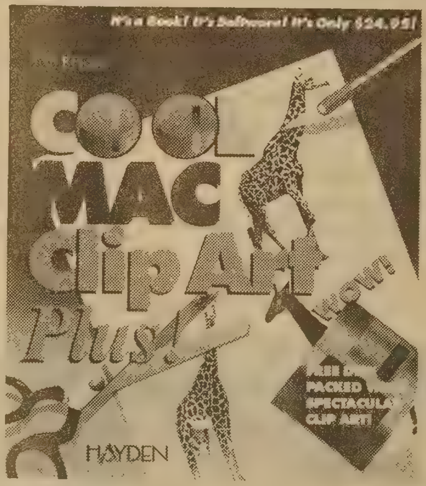


work for you. This book supplements Word's documentation, the Microsoft Word reference manual, by showing you, in step-by-step fashion, how to use Word." Written clearly, this book is filled with examples, exercises, and illustrations to help you tap the power of Word 5.1 for the Macintosh. ($19.95) Osborne/McGraw-Hill, 2600 Tenth St., Berkeley, CA 94710.

COOL MAC CLIP ART PLUS!

Author Tony Reveaux has organized *Cool Mac Clip Art Plus!* "to introduce the reader to computer graphics and desktop publishing through the fun and fancy of clip art." Using clip art to enter the world of graphic design, Tony Reveaux explores such issues as graphic file formats, motion clips, designing a letterhead, clipping into multimedia, using a scanner, copyrights, buying clip art, and much more. The Cool Disk, included with this book, contains DeskPaint 3.08, PopChar, DavysDingbats, and over four hundred clip art images. ($24.95 includes disk) Hayden, a division of Prentice Hall Computer Publishing, 11711 N. College Ave., Carmel, IN 46032.



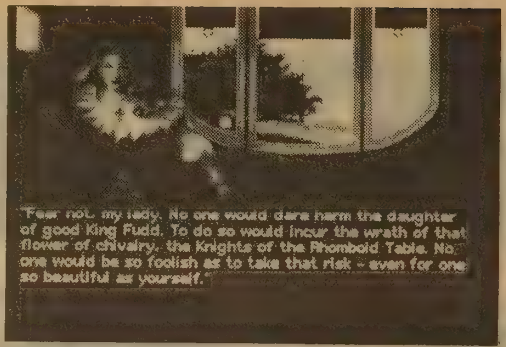
REVIEWS

GAME REVIEWS

By Mike Markowitz

ERIC THE UNREADY

Designed By: Robert Bates
Published By: Legend Entertainment
Distributed By: Accolade
For: MS-DOS (640K, SVGA, VGA or EGA graphics, supports popular audio cards, mouse recommended)
List Price: $59.95


"Fear not, my lady. No one would dare harm the daughter of good King Fudd. To do so would incur the wrath of that flower of chivalry, the Knights of the Rhomboid Table. No one would be so foolish as to take that risk - even for one so beautiful as yourself."

The entire category of comic adventure games offends some players who take their entertainment Very Seriously Indeed. When "comic" turns out to mean bad puns, sexist humor, and obscure in-group jokes about other games, there is plenty to offend everyone. But Eric the Unready is worth a second look.

As Eric, a luckless Knight in the donut-shaped world of Torus, your quest is to rescue the abducted Princess Lorealle from the Wicked Queen Morgana and her consort, Sir Pectoral. To complete the quest you must find several magical objects, including the Pitchfork of Damocles, the Crescent Wrench of Armageddon, and the Raw Steak of Eternity. Before you can do that you must withdraw the enchanted fruit, Excalibanana, from the stone where it is embedded. But before you can do any of that, you must figure out how to get a farmer's pig out of a latrine it has fallen into.

Graphics and Animation: 9
Sound: 8
User Interface: 9
Overall Value: 9

The game's user interface is a delight. You move from scene to scene by clicking the desired direction on a compass rose. You can construct your text inputs by simply clicking to select nouns, verbs, and modifiers from lists that automatically reflect what's currently available. When you converse with a character, you only need to select a canned phrase from a menu. Various events trigger animated sequences, or even games within the game (ever play "Concentration" against a dwarf?).

Don't forget to pick up and read any newspapers you find on a dungeon floor. The classified ads are usually a hoot:

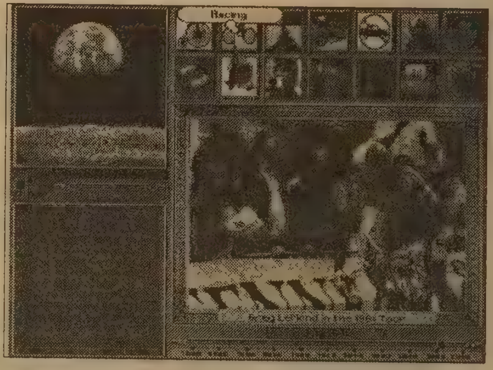
> **Help Wanted - Merry Men**
> **Established outlaw seeks support group. Successful candidates will have experience sleeping in forest as well as hands-on experience in wealth redistribution programs.**

The program is installed from four 3.5" high-density disks, and its 121 files occupy over 7MB of hard disk space. The 36-page user manual includes helpful hints and a complete vocabulary of game commands, but most adventurers will need to order the $9.95 hint book to complete the quest. (Legend Entertainment, 14200 Park Meadow Dr., Chantilly, VA 22021. 703/222-8500 or 1-800-245-7744)

GREG LEMOND'S BICYCLE ADVENTURE

Designed By: Minoo Saboori and Matthew London
Published By: Eden Interactive
For: MS-DOS (640K, VGA graphics, supports mouse and popular audio cards)
List Price: $79.99

One of the prettiest metaphors in the history of technology was Steve Jobs' description of the personal computer as a bicycle for the mind. A bicycle uses mechanical technology to amplify and extend the power of human muscles. At their best, computers use electronic technology to amplify and extend the power of the human brain. Bicycle Adventure uses interactive computer technology to teach you an enormous amount of information about bicycles and the sport of cycling. Topics include: history, touring, racing, equipment, people, mountain biking, and environmental impact.



A recently rediscovered sketch by Leonardo da Vinci, circa 1493 shows a surprisingly advanced concept for a bicycle, but the idea of a human-powered vehicle took centuries to catch on, due to the aristocratic preference for horses and the poor state of urban streets and country roads. The sport of cycling eventually became a national passion in many European countries.

The program uses a licensed version of Knowledge Adventure's excellent interactive book engine. The screen is divided into a graphic and animation window, a panel of control buttons, a time line, and a world globe that you can rotate or zoom. There are a number of short film clips that show off Knowledge Adventure's impressive proprietary video compression technology.

I was surprised by a few omissions in the program. There is no mention of Orville and Wilbur Wright, who began as bicycle mechanics in Dayton, Ohio. What the bicycle taught them about strength, lightness, and mechanical reliability they put to good use in designing the first airplanes. There was also no mention of the bicycle in war (between 1920 and 1940, several European armies formed bicycle reconnaissance battalions, one of the oddest footnotes to military history).

Bicycle Adventure is installed from compressed files on five high-density 3.5"

Continued on page 195

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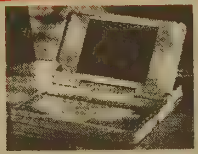

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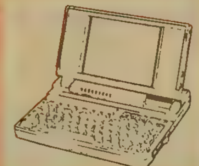

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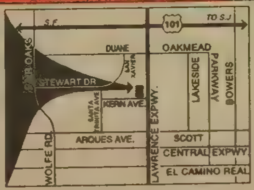
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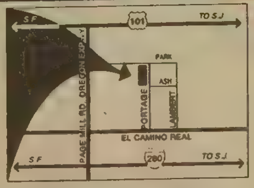
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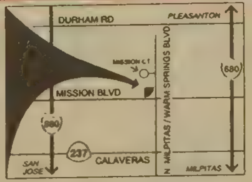
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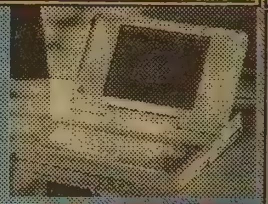

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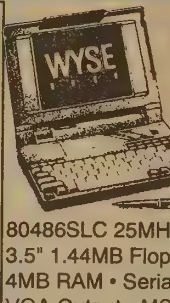

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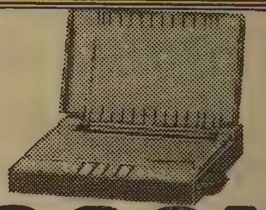

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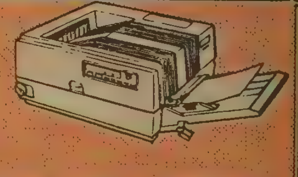

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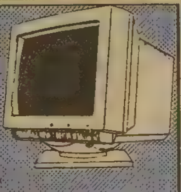

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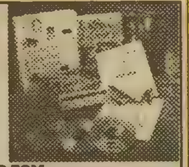

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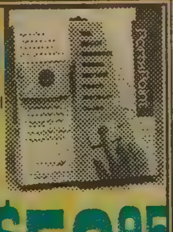

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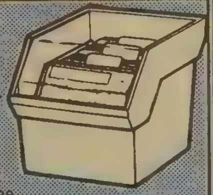

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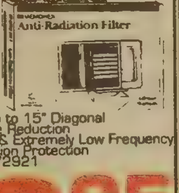

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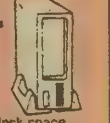

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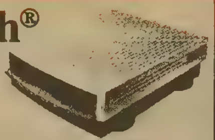

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- Built-in video support for 256 colors, expandable to 32,000 colors
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- Security key for locking PowerBook Duo and slot for a security cable

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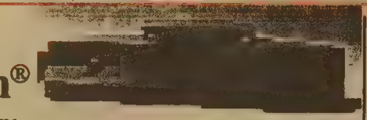

- Small size and weight for easy portability
- PowerLatch docking technology
- Built-in video support for 256 colors
- Supports most Apple displays, including the Macintosh 16" Color Display, as well as some VGA and SVGA displays
- 9 built-in ports, including SCSI port
- Slot for a security cable
- Port for connecting external floppy disk drive

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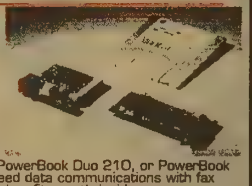

Apple's new Macintosh PowerBook Express Modem makes an excellent choice if you use a Macintosh PowerBook 160, PowerBook 180, PowerBook Duo 210, or PowerBook Duo 230 notebook computer and want high-speed data communications with fax send and receive capability. This low-power modem fits neatly inside your Macintosh PowerBook computer and provides up to 57,600 bits-per-second (bps) data transfer, so you can send information to another computer from any location up to 24 times faster than with an ordinary 2400 bps modem lacking compression capabilities. The Macintosh PowerBook Express Modem with its Express Fax software allows you to send and receive faxes at 9600 bps. Whatever you can print, you can fax. You can even use fax machines as printers on the road: Documents faxed from the PowerBook don't have to be scanned, so text and graphics are sharp and clear. The built-in smoothing feature makes received faxes much clearer and sharper than those from competitive modems. Fax forwarding, quick-send, and calling card support also increase flexibility.

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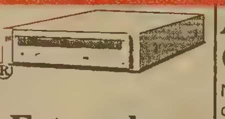

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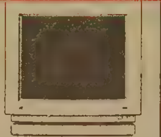

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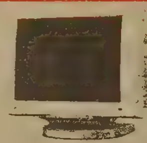

See more of your work—in bright, vivid color—in a more comfortable and efficient environment with the Apple® Macintosh® 16" Color Display. It delivers a combination of performance, comfort, and convenience not found in other displays. The 16-inch screen gives you 70 percent more work area than standard monitors. Not only can you see multiple windows of text and color graphics at the same time, you can also access disk volumes and the Trash while a full page-width document is open.

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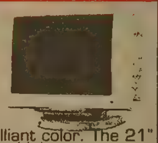

The Apple® Macintosh® 21" Color Display sets the standard for large-screen color displays, and lets you work with two full pages of text and graphics in brilliant color. The 21" Color Display is ideal if you need a high-performance, large-screen color display for presentations, page layouts, engineering design, or video applications. The 21-inch screen provides more than three times the screen area of standard displays to give you more room to work—and increase your productivity. The Macintosh 21" Color Display lets you work with as many colors as your video card will support.

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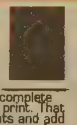

The Apple® Macintosh® Portrait Display is a high-resolution 15-inch monochrome display. It's ideal for work with desktop publishing, word processing, and general productivity applications. The full 8 1/2 x 11-inch page display shows a complete page of information just as it will appear in print. That makes it easy to preview and edit documents and add text or graphics. You'll also find that page layout of text and graphics will be more accurate and much more efficient. And you'll see clearly how the flatter screen and higher refresh rate can minimize flicker, and provide excellent focus for sharp, clear images and text.

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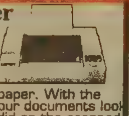

The Apple Color Printer delivers superior print resolution, speed, and color matching on a wide range of paper sizes and types—including 11 X 17-inch paper. With the Apple Color Printer, colors in your documents look the same on the page as they did on the scanned image. That's because the Apple Color Printer is integrated with ColorSync, Apple's unique color-matching software. And at 360 dots-per-inch (dpi) print resolution, the Apple Color Printer offers 44 percent higher resolution than traditional 300-dpi printers.

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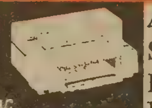

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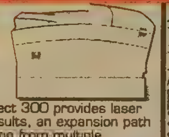

The Apple LaserWriter Select 300 provides laser printing with high-quality results, an expansion path to PostScript, printer sharing from multiple Macintosh computers, and extensive paper-handling capabilities.

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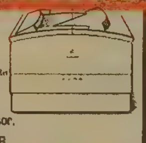

Apple® Laserwriter® Pro 600. The perfect choice for high-performance printing.

- 25-MHz Motorola 68030 processor.
- 600 dots per inch resolution.
- 8MB memory expandable to 32MB
- 100 and 250 sheet tray
- Option 500-sheet cassette and 75-envelope feeder
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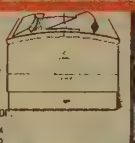

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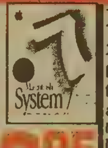
Apple® System 7.1



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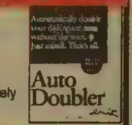
Auto Doubler™ 2.0



Auto Doubler effectively doubles the space on any Macintosh disk using file compression. It is completely automatic in that it compresses files in the background while your Macintosh is idle and expands them automatically when you use them. Auto Doubler is fast, safe, and efficient.

MAC #1735990

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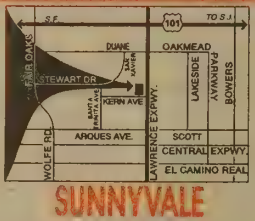

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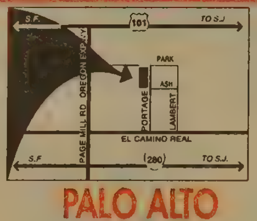

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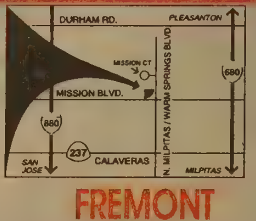

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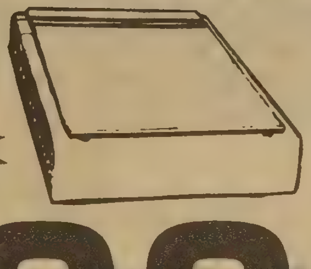

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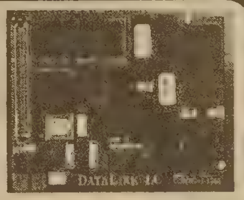

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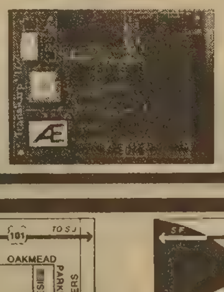

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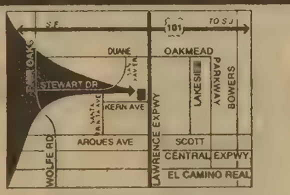
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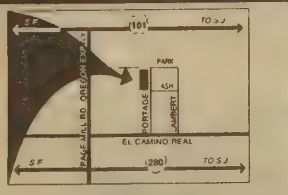
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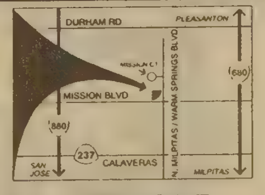
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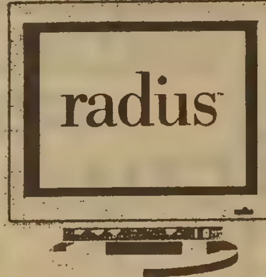

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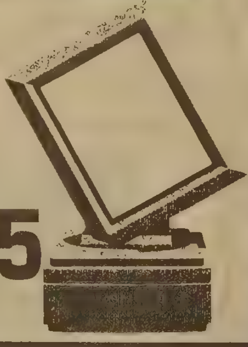

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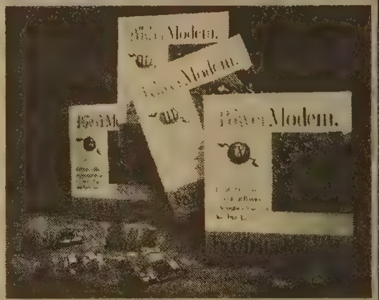
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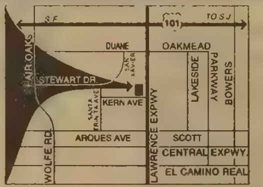
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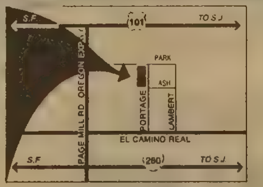
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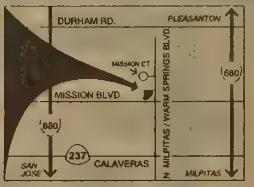
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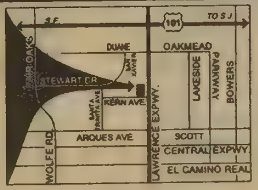

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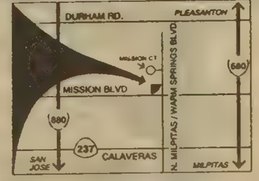

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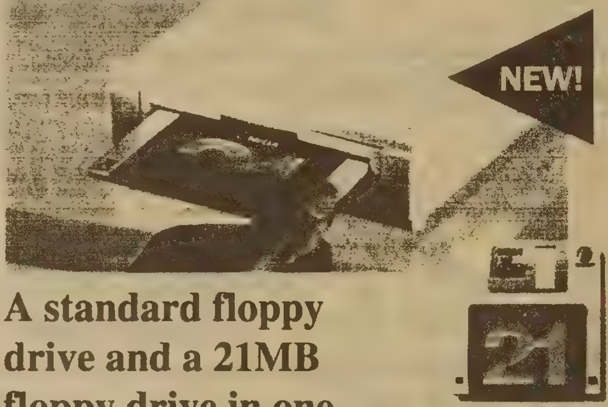

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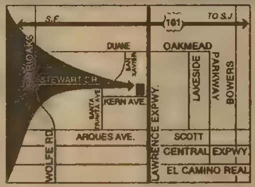
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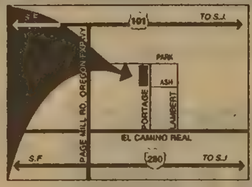
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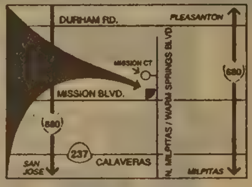
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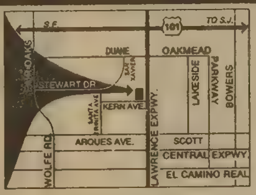
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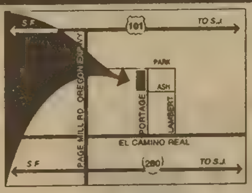
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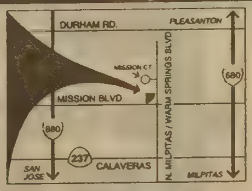
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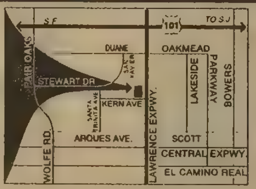
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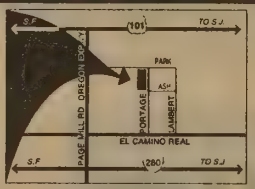
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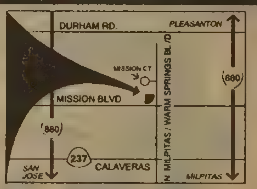
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- No RAM or VGA feature connector required

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- Multisource Analog mixer
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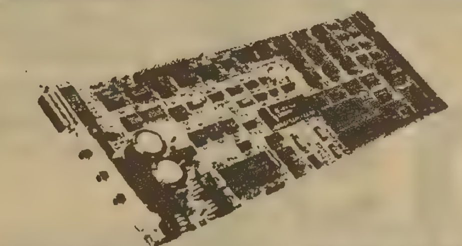

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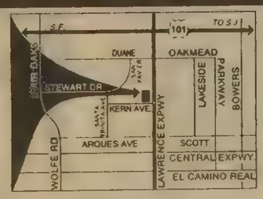
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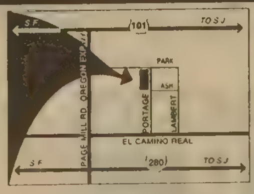
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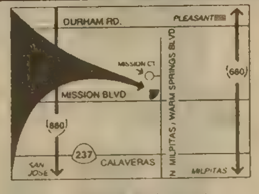
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*After factory rebate.
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$149 *

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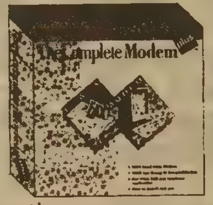

9600 Baud FAX
2400 Baud Modem

Windows/DOS applications • Background Operation
MNP-5 • RapidFax Communication Software
#1755918

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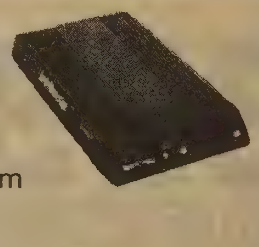
TurboModem™ PLUS External



- TurboModem Plus External V.32 bis/v.42 bis Data Modem and Fax Unit
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- Powerful Data Communications Software
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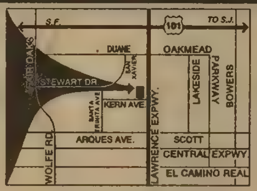
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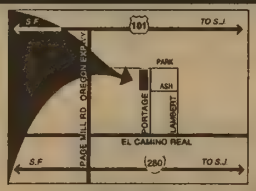
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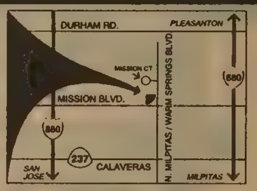
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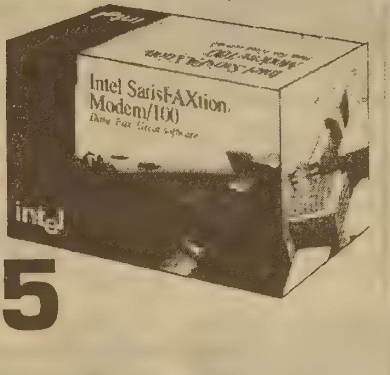

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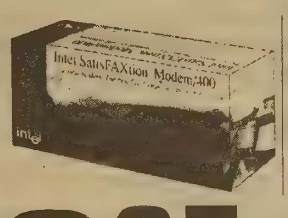

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14,400 bps
External Modem
42 bis DTE
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Great looking faxes. A cinch to use.

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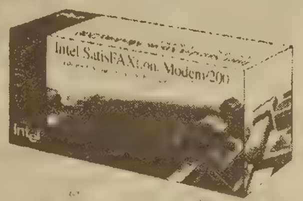
MODEM
9600 BAUD FAX



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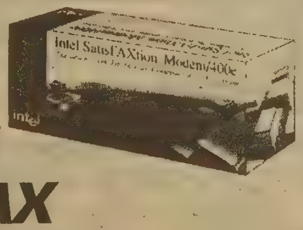
BAUD MODEM
9600 BAUD FAX



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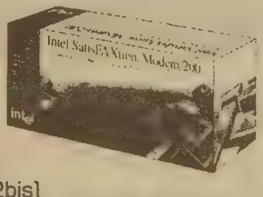
DATA MODEM
9600 BPS FAX



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14,400BPS data modem(v.32bis)
Up to 4:1 data compression 57,600bps(v.42bis)
High speed data buffer chip(16550 UART)
9600bps send/receive fax. Software included: FAX ability Plus, Crosstalk Communicator and DOS Fax software.
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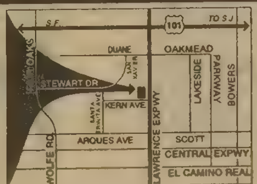

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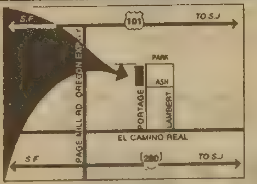

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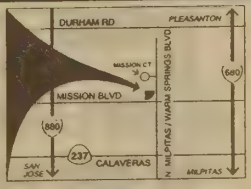

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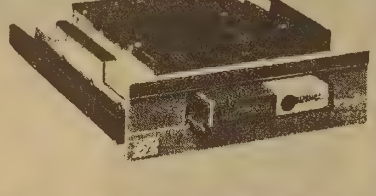

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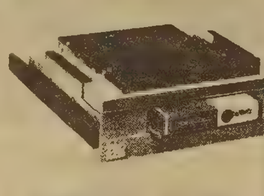

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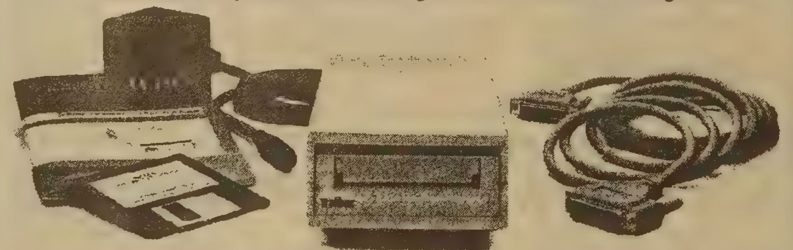

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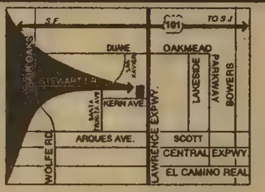

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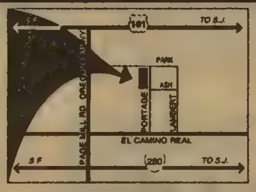

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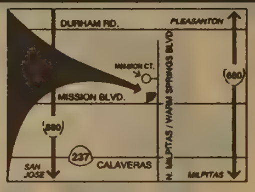

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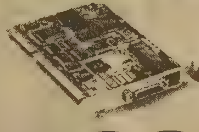

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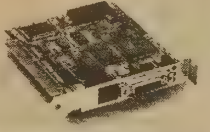

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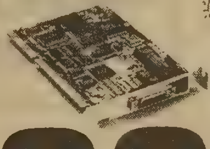

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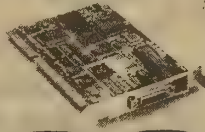

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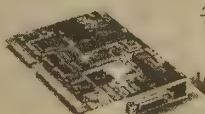

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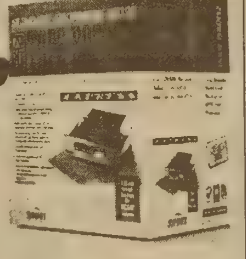

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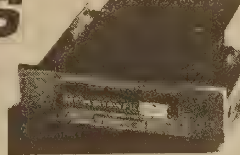

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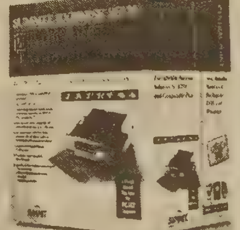

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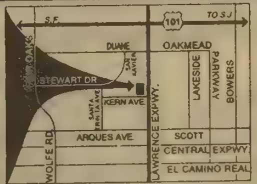
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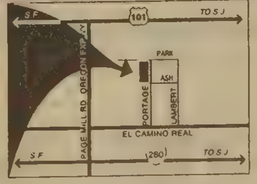
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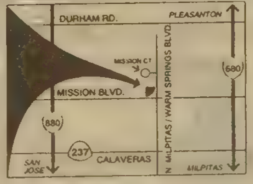
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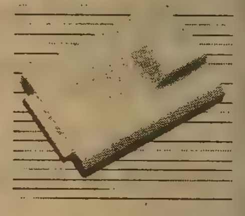

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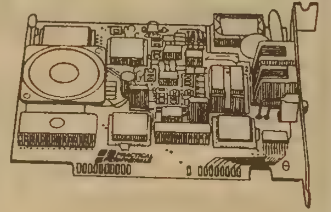

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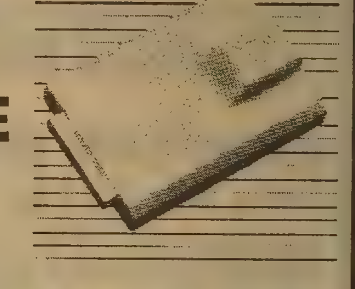

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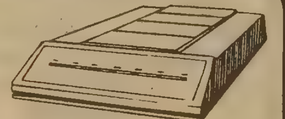

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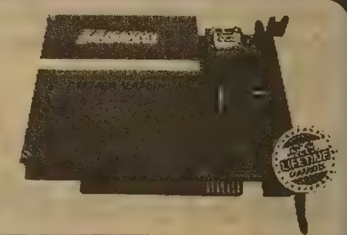

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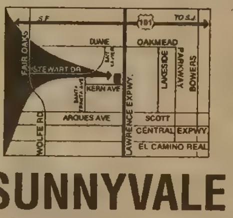
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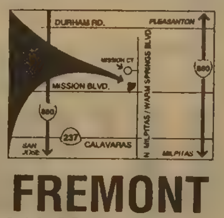
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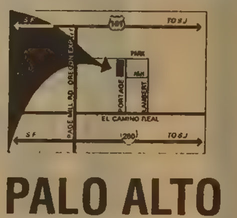
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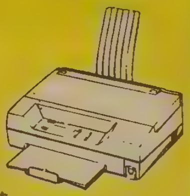

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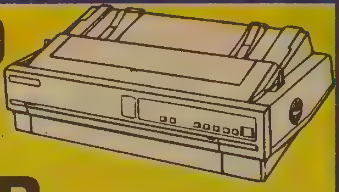

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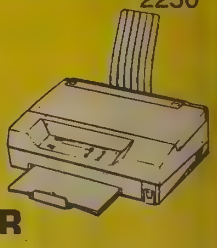

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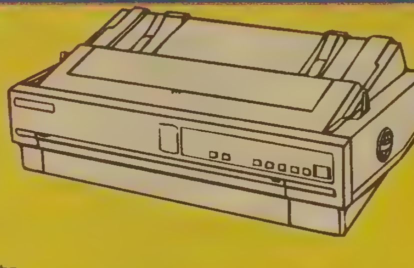

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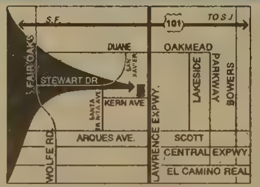
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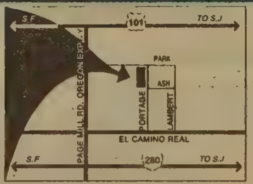
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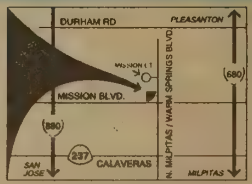
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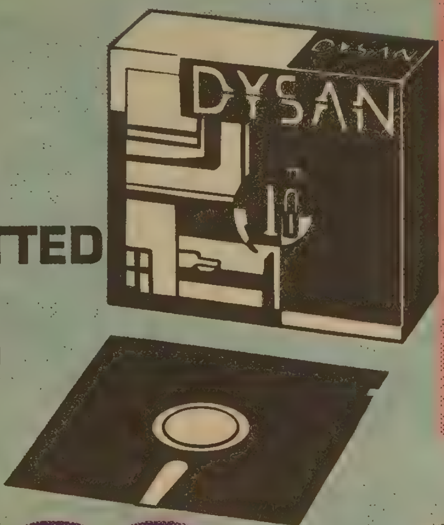

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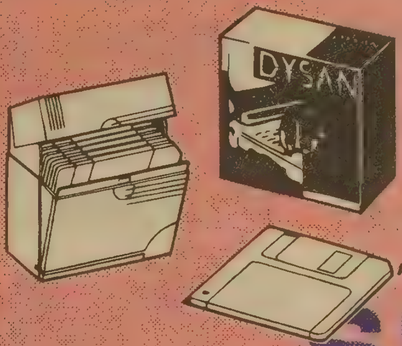

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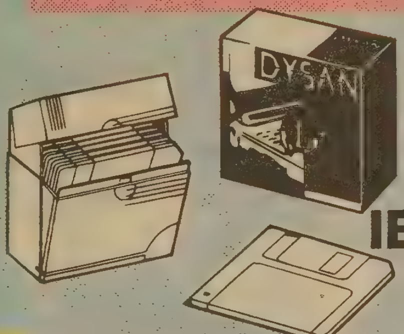

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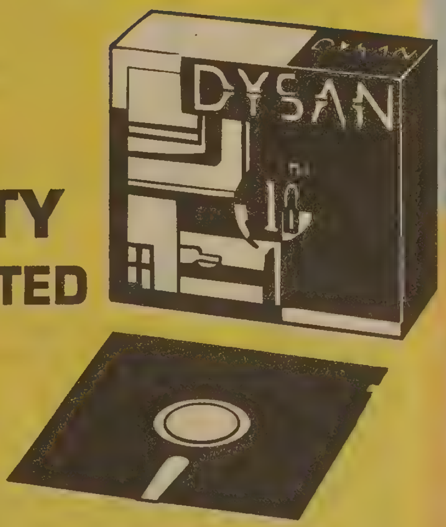

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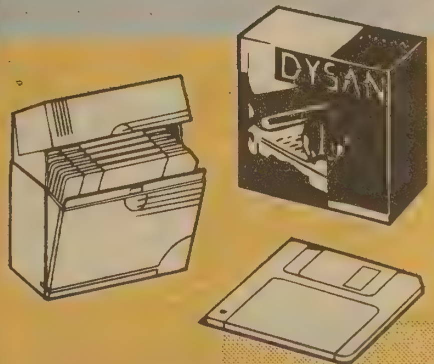

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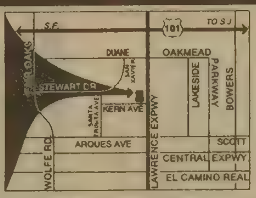
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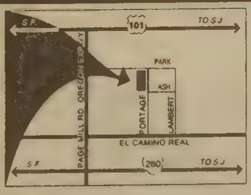
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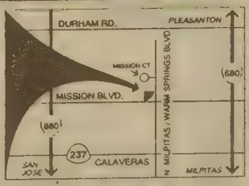
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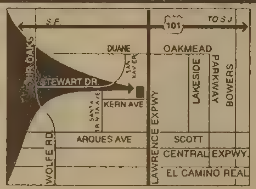
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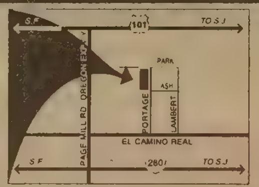
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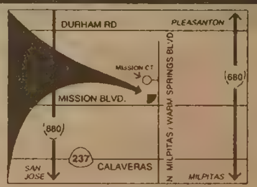
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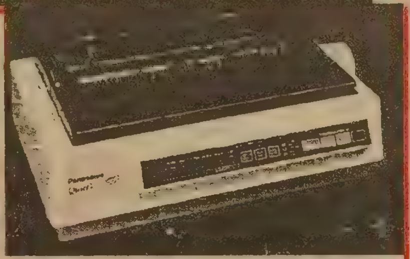

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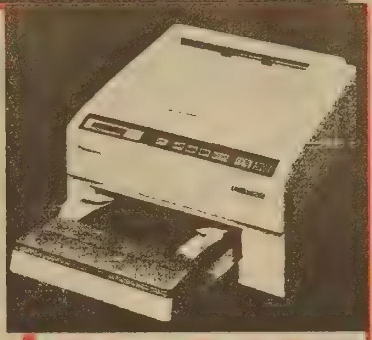

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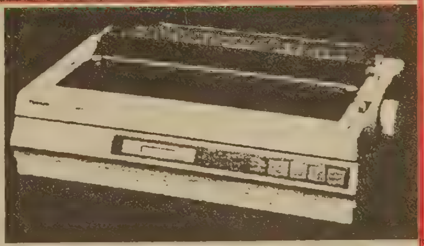

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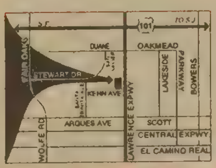
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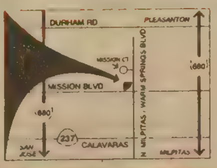
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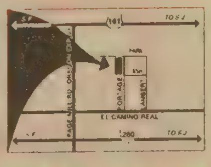
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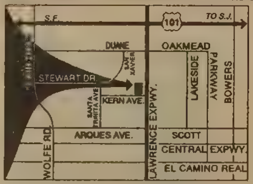

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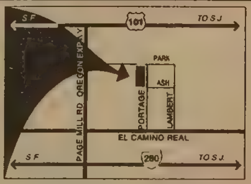

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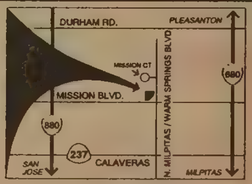

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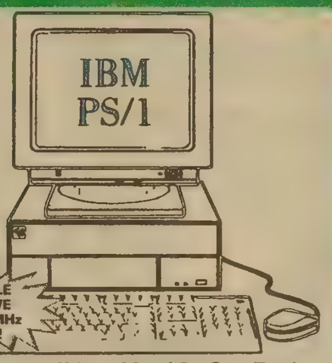

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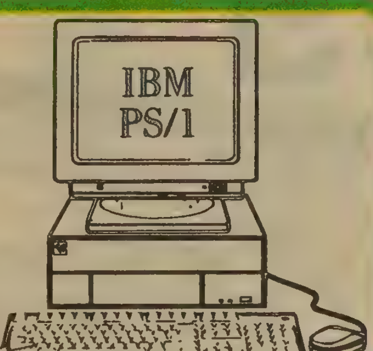

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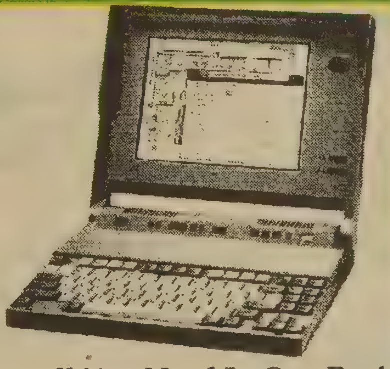

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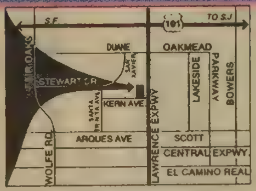
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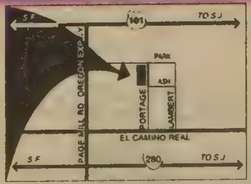
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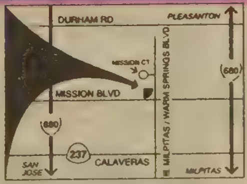
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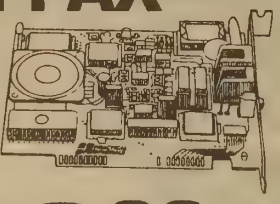

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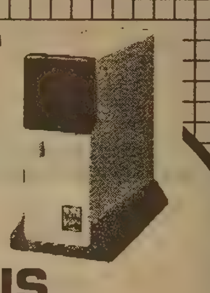

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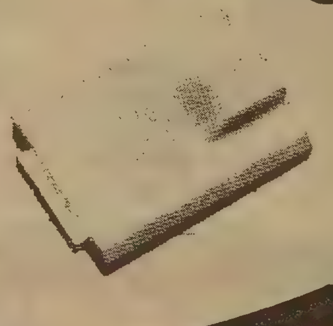

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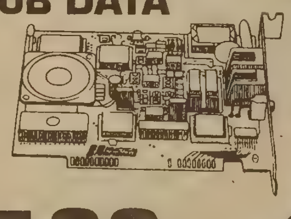

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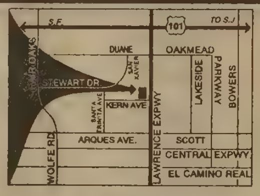

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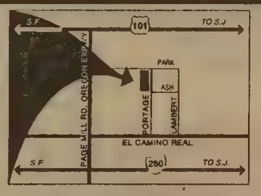

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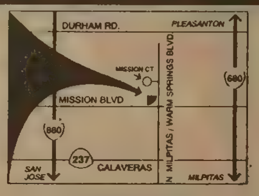

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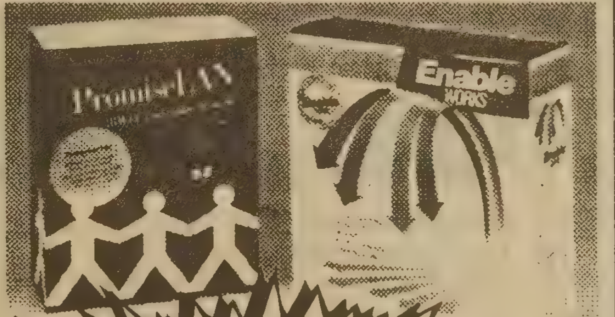
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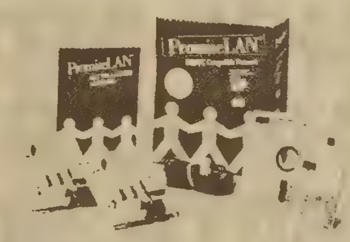
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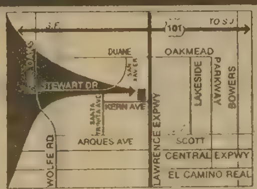
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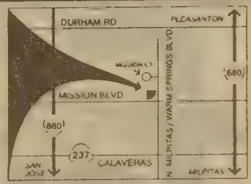
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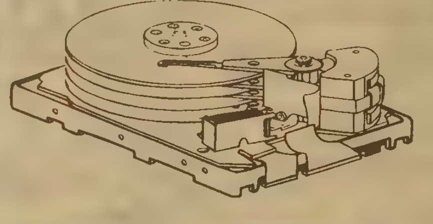

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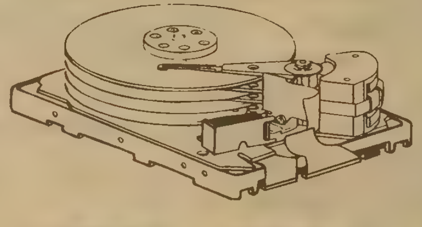

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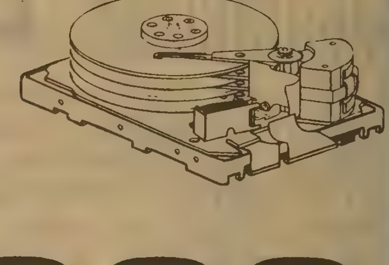

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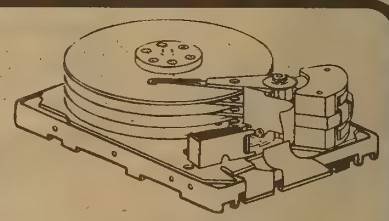

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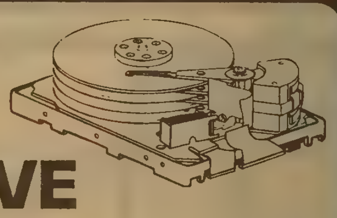

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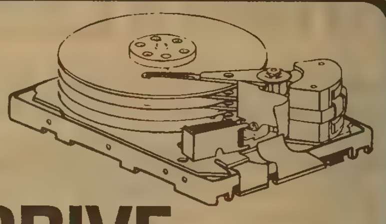

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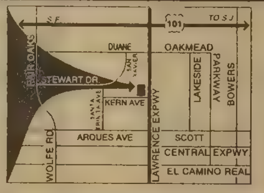
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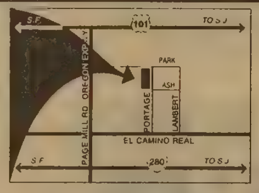
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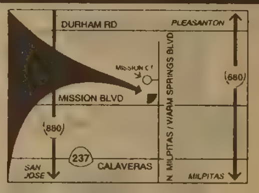
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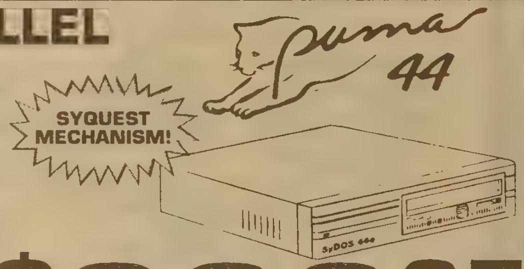
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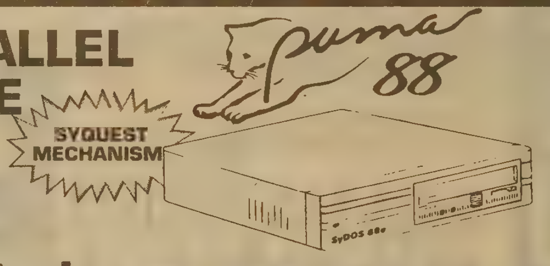
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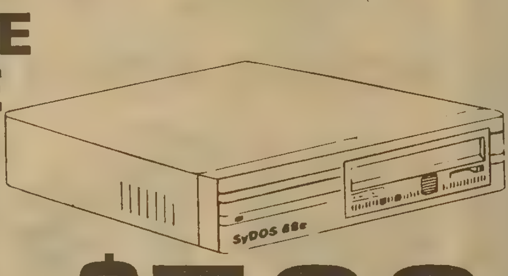

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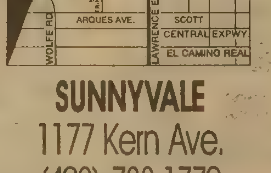
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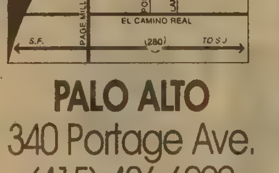
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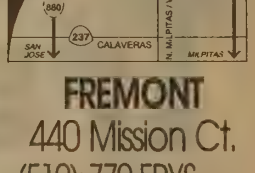
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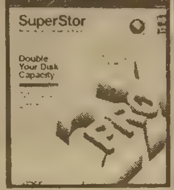

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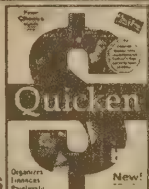

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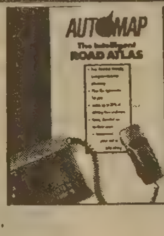

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After Dark provides over 30 different displays to prevent screen burn-in. You can choose any style including lightning bolts, abstract art, crawling worms, a jump-to-light-speed or a basic dimmer.

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STACKER for Windows and DOS 3.0

DOUBLES HARD DISK CAPACITY

DOUBLE
YOUR DISK
CAPACITY.
STACKER

Stacker for Windows and DOS, from Stac Electronics, is an award winning hardware software that instantly and safely doubles your data without losing any information. Stacker works on all Window and DOS-based computers, and is ideal for laptops and notebooks as well as desktop systems.

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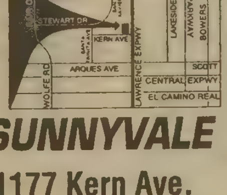

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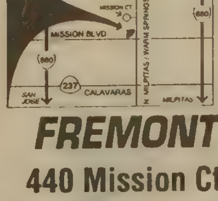

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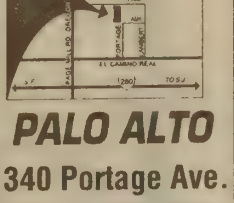

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Panasonic

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Answering system with Auto-Logic Operation, Tone Remote Control, Digital Display, Message Memo Recording and Remote turn on, Auto-Logic Operation Automatically Rewinds, Plays Messages, Stops at the Last Message and Resets itself at the Touch of One Button.

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BEEPERLESS REMOTE ANSWERING MACHINE

This compact answering machine is perfect for just about anybody. Fully featured, you can retrieve your messages from any tone phone. Plus, with Panasonic's Auto-Logic operation you can hear your messages with the touch of a button. Other features include auto-interrupt, 12-function tone remote control memory playback and call screening.

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DUAL MICRO CASSETTE ANSWERING SYSTEM

Panasonic's new dual micro cassette answering system offers an LCD Call Counter, marker message, room monitor, auto disconnect, electronic auto disconnect, electronic volume control, audible message alert, and much more for only...

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A two line phone doesn't have to cost a fortune. Panasonic has the low cost answer for you. This unit has a convenient auto dialer, conference calling and much more!

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A perfect compliment to your home or office, this two-line speakerphone comes equipped with 3-way conferencing, 20 number programmability, separate ring switches for each line, and a local mode function. Now only...

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#1510676

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KX-T3185
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CORDLESS TELEPHONE

W/ ONE-TOUCH REDIAL

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In stock now...

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10-CHANNEL AUTO SCAN CORDLESS PHONE

Panasonic's newest cordless phone comes equipped with a retractable antenna, flexible rubber antenna, sound charger technology, which helps filter out background noise resulting in enhanced sound quality, and 1-way paging between the base and handset. An excellent value at only...

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MODEL
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#1764839

Panasonic

10-CHANNEL CORDLESS PHONE W/ INTERCOM

Panasonic's Advanced Sound Charger technology and 10-channel access sharpens mobile sound quality! This unit has enhanced battery standby life, automatic intercom, 2-way paging, a 10-number memory and last number redial.

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MODEL
KX-T3720
#1511390

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10-CHANNEL AUTO SCAN CORDLESS PHONE W/ LIGHTED KEYPAD

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10 CHANNEL CORDLESS SPEAKERPHONE WITH LCD DISPLAY

The LCD on the handset shows the channel number dialed, out-of-range-alert, call duration and more! There's also 10-channel remote change with autoscanning which automaticly scans for a clear channel while in the standby mode or in the base unit! Now only...

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MODEL
KX-T3860
#1652372

Panasonic

2-LINE 10 CHANNEL CORDLESS PHONE WITH SPEAKERPHONE

The KX-T3980 is one of the most versatile phones Panasonic has ever developed! When you combine the convenience of a cordless phone with the flexibility of a 2-line capability along with speaker phone, 3-way conference, 2-way page, and auto intercom, it all adds up to a value too good to pass up!

$188 95

MODEL
KX-T3980
#1671595

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THE WORLD'S BEST CORDLESS TELEPHONE PANASONIC 900MHz

It's simply Incredible! Take this phone down the street to your neighbors for a barbeque and you will think you were calling from your own backyard! But that's not all! It's also the ultimate cordless phone for small businesses that can't afford to have anything interfere with an important call! Besides the advantages of mobility and clarity, this model has an impressive list of features including, intercom with 2-way paging, 30 channel auto scanning, auto speed dialer, private digital security and much much more! Now only...

$348

MODEL
KX-T9000
#1677122

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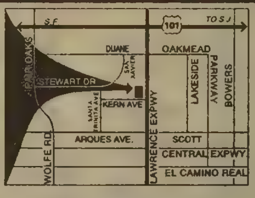

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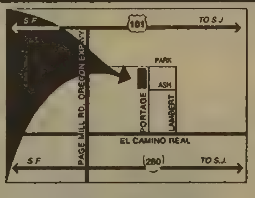

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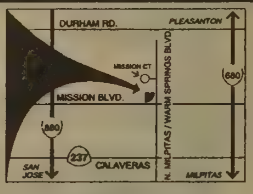

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$49^95

Model
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#11728462

CASIO B.O.S.S. w/64KB MEMORY
AND WIDE SCREEN DISPLAY

Imagine, a traveling secretary that fits in your and doesn't take coffee breaks! This electronic secretary's dazzling array of talents include the ability to store telephone numbers, business card information, a daily alarm, an alarm schedule (to remind you when your running late), memos, and it will even keep you appraised of the time in different parts of the world! A must hire at only...

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Model
SF-8300
#1751774

CASIO 32K DIGITAL DIARY

Why carry around a calendar and schedule book, telephone directory and notebook, when you can do it all and more with this new digital diary from Casio. Optional PC and Mac links also available.

$59^95

Model
SF-4300
#1647189

CASIO B.O.S.S. IC CARD SYSTEM
w/WIDE SCREEN DISPLAY

In today's world, It's sometimes hard to keep track of where you've been, who've seen, and where your going, but now it's easy as saying "C.A.S.I.O."! With this executive B.O.S.S. you will recieve 64K of memory, a raised QWERTY keyboard, schedule function, two-month calander display, clock with world time capability, business card library, telephone directory, memo function, daily alarm, schedule alarm, and much more. For Mac and PC users, Casio's optional Interlink cables will enable you to transfer data files to your computer. Now just...

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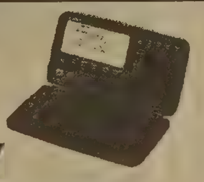
Model
SF-9300
#1751785

CASIO B.O.S.S. w/64KB MEMORY



This business organizer scheduling system comes packed with powerful functions that are practical and easy to use. The QWERTY Keyboard, telephone directory, calendar, memo function, schedule alarm, world time function, home time function, and schedule keeper will prove to be an invaluable tool in keeping your busy days in order. An excellent investment at...

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Model
SF-5300
#1671137

CASIO 256K EXECUTIVE B.O.S.S.
w/BUILT-IN SPREADSHEET

Casio's latest business organizer comes equipped with a business card management function, schedule function, two month calendár display, world time, a daily alarm , schedule alarm, telephone directory, memo functions, reminder function, to do list, cut & paste function, and spreadsheet function (compatible with Lotus 1-2-3 data) all displayed on a wide 40 character by 10 line screen. An Invaluable investment at only...

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Model
SF-R20
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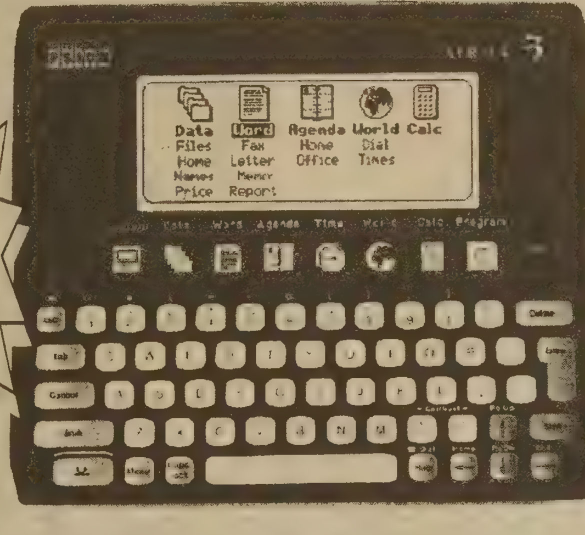
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Word
Fax
Letter
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Report
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POCKET SIZED 256KB COMPUTER
W/ BUILT-IN SPREADSHEETS

Psion has redefined the state of the art in hand held computers with the new Series 3. It may be small, but this pocket-sized programmable computer comes equipped with features found in desktop machines plus powerful built-in software, including a full specification word processor and outliner that's compatible with Microsoft word. When using the Series 3 you will quickly learn from the system of graphic displays and option list how easy the Series 3 is to use. And with Psion's unique Multitasking Operating System, as many of the facilities as you want can be used at the same time! Other features include an automatic phone dialer, world information, a time and personal management file, powerful graphics programming language (OPL/w) which will enable you to write your own applications and two expansion ports for plug in SSD devices for unlimited memory and software.

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MODEL
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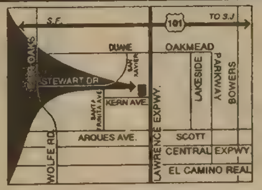
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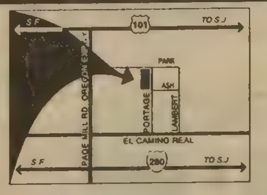
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101
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PAGE MILL RD. OREGON EXPWY
PARK
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PORTAGE
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EL CAMINO REAL
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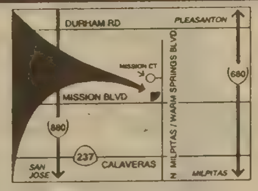
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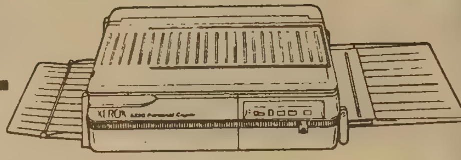

Don't settle for a copy when you can have the original... Xerox. Xerox is so confident in the quality and reliability of it's copiers that it offers an exclusive 3 year warranty on all it's copiers. This model offers a paper tray that stacks 40 sheets, a built-in carrying handle and removable storable paper trays, multi-copy capability which can be set from 1 to 9 copies or "C" for continuous up to 20 copies, and automatic exposure which scans documents for degrees of lightness or darkness to determining the appropriate exposure setting. An Invaluable addition to any home office.
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3 YEAR Warranty

TOTAL SATISFACTION GUARANTEE

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w/16 LEVEL GREY SCALE

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#1744796

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Authorized Dealer

PLAIN PAPER FAX MACHINE

w/256 KBYTES OF MEMORY

This plain paper fax offers 256 Kbytes of memory, a 20 page document feeder, 32 gray scale levels, 100 page capacity with easy front reloading, 12 page memory, plus many more outstanding features for only...

Model
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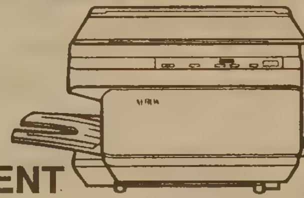

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If you're looking for versatility and premium performance in a copier your search is over! Xerox has designed a copier that incorparates reduction/enlargement technology enabling you to reduce a copy 75% and 95%, and enlarge to 124%, a 250 sheet paper tray which adjusts to hold memo to letter to legal size paper, built-in automatic exposure which scans documents for degrees of lightness or darkness to determine the appropriate exposure setting, multi-copy capability of 1 to 50 copies, letter and legal size copying, and manual bypass, all backed by the experts at team Xerox.
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#1706109

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3 YEAR Warranty

TOTAL SATISFACTION GUARANTEE

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CARTRIDGE
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FAX MACHINE

w/PAPER CUTTER

Brother's breakthrough fax machine incorporates newly developed therma plus technology which uses fax paper that feels like plain paper and reduces print fading (last 3 times longer than thermal paper under normal filing conditions, and you can even use a highlighter!). Other features include, 10 page document feeder, 15 station memory, 16 level grey scale, activity report, polling and much more for only...

Model
FAX-600
#1705603

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HEWLETT PACKARD
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PLAIN PAPER FAX MACHINE

w/512 KBYTES OF MEMORY

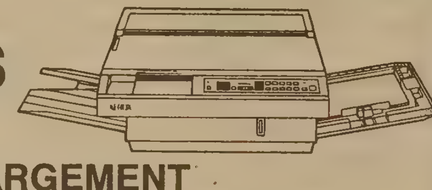
HP's top-of-the-line fax with 300dpi scanning and printing, 512kbytes of memory (expandable to 2.5 mbytes), a 20 page document feeder, 32 grayscale levels, copy reduction capabilities, and yes, it's very affordable at only...

Model
FAX-310
#1684236

$1247

XEROX

SMALL BUSINESS COPIER



w/REDUCTION & ENLARGEMENT

Xerox engineers have developed an affordable copier for businesses with high volume demands. The Included copy cartridge is designed to deliver 18,000 copies and is guaranteed to deliver 16,000 before needing replacement. Other features include a 250 sheet paper tray, automatic exposure, photo mode to make clear copies of photographs, a graphic display which indicates the location of jammed paper, that the paper tray is empty, and that the copy cartridge is nearing th end of it's life, a multi-copy button that can be set from 1 to 99 copies, dual electonic meters which displays the number of copies made by the cartridge in use of and the total number of copies made by the copier, an output tray that collects up to 110 finished copies, and much more. An excellent investment at...
Model 5011
#1706121

$1647

XEROX Authorized Retailer

3 YEAR Warranty

TOTAL SATISFACTION GUARANTEE

Panasonic

FAX MACHINE

w/PAPER CUTTER AND ANTI-CURL

This fully featured Fax from Panasonic comes equipped with an auto-logic answering system and auto paper cutter, as well as copier capabilities. It's the perfect secretary for your home or business!

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KX-F250
#1770023

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Panasonic

PLAIN PAPER LASER FACSIMILE

It's an answering machine, integrated telephone, plain paper laser facsimile with copier capabilities all rolled into one! The 250 page paper cassette, along with the 20 page document feeder makes this the perfect facsimile for businesses that need high volume capability along with clear fax resolution.

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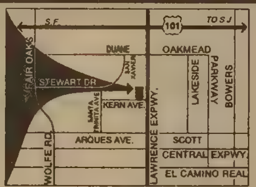

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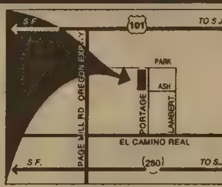

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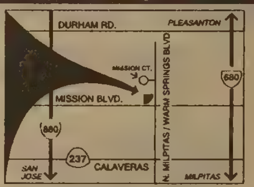

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Video 8
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- Ideal for all 8mm camcorders

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- Perfect for Hi8 Camcorders

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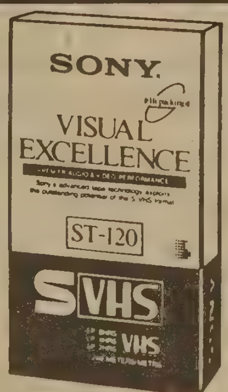
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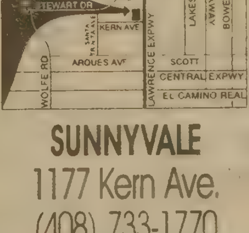
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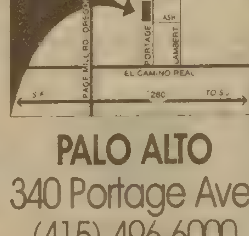
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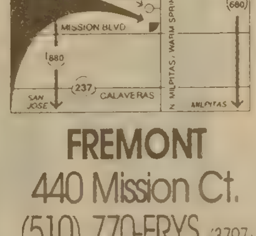
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MODEL
TAM-30
#1481910

$67⁹⁵

SONY.

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SONY.

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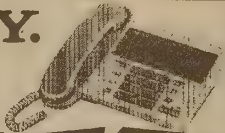

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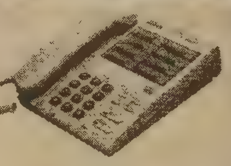
IT-A4000

$177⁹⁵

BUSINESS PHONES

SONY.

SPEAKER PHONE W/16# MEMORY



From the leader in cordless phone technology comes a new line of feature phones. This unit has a crystal clear speakerphone, 16 number memory and more!

MODEL
IT-D10
#1699142

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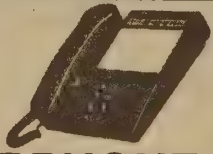
SONY.



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Have you ever made a mental note to call someone, and then forgot? Well, you won't have that problem anymore because this speakerphone comes equipped with an automatic call timer/ reminder alarm! Now only...

MODEL
IT-D150
#1516889

$77⁹⁵

SONY.

2-LINE FEATURE PHONE w/SPEAKERPHONE

Phones with 2-line operation are relatively commen, but this phone offers a distinctive ring for each line! The LCD indicator will tell you the number dialed and the time. Now only..

MODEL
IT-D250
#1516904

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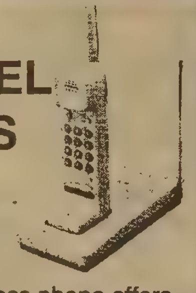
10 CHANNEL CORDLESS PHONES

SONY.

10 CHANNEL CORDLESS PHONE W/ LIGHTED KEYPAD



This 10 channel cordless phone offers out of range alert, extended 7-day battery standby power, 10 number speed dialing, and many other features for only...

MODEL
SPP-77
#1766990

$97⁹⁵

SONY.

10 CHANNEL CORDLESS PHONE w/SPEAKERPHONE & LIGHTED KEYPAD

Sony's come up with a winner with this 10 channel speakerphone! With out of range alert, extended 7-day battery stand by power, and 10 number speed dialing, it's an excellent value at only...

MODEL
SPP-97
#1767005

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SONY.

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This Sony cordless phone offers a variety of special features that make cordless conversation more convenient than ever. Its built-in speaker phone and dial-out keypad gives you the option of making or answering calls at the base unit or the handset and the 2-way paging / intercom feature lets you talk directly between handset and base. Perfect for the home or office at only...

MODEL
SPP-190
#1720693

$197⁹⁵

CORDLESS COMBOS

SONY.

10 CHANNE CORDLESS PHONE w/ ANWERING MACHINE

This innovative product fro Sony actually combines a ten channel cordless phone with a full featured answering machine in one sleek package. Features include 256 security codes, 7 day stand-by, compander noise reduction and remote message retrievel.

MODEL
SPP-A20
#1714074

$147⁹⁵

SONY.

10 CHANNE CORDLESS PHONE w/ ANWERING MACHINE & VOICE TIME DAY STAMP

This innovative product from sony actually combines a ten channel cordless phone with a full featured answering machine in one sleek package. Features include 256 security codes, 7 day stand-by, compander noise reduction and remote message retrievel.

MODEL
SPP-A40
#1720578

$177⁹⁵

SONY.

10 CHANNEL CORDLESS SPEAKER PHONE w/ ANSWERING MACHINE & VOICE TIME DAY STAMP

This innovative product from Sony actually combines a ten channel cordless phone with a full featured answering machine in one sleek package. Features include 256 security codes, 7 day stand-by, compander noise reduction and remote message retrieval. As an added bonus, the base unit is a speakerphone with adjustable volume.

MODEL
SPP-A60
#1720590

$197⁹⁵

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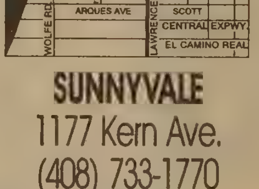

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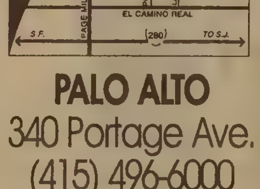

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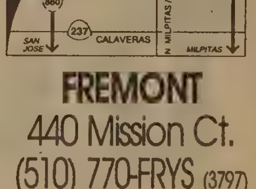

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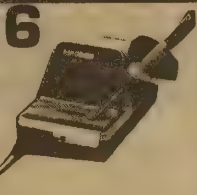

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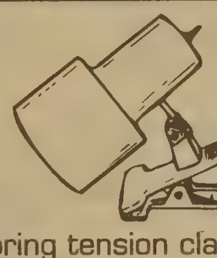

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- Capacitance to 20uF
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#1701414

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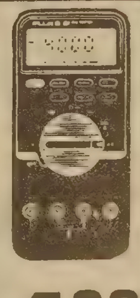
FLUKE 87 4 1/2 DIGIT TRUE RMS DIGITAL MULTIMETER



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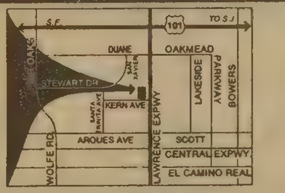

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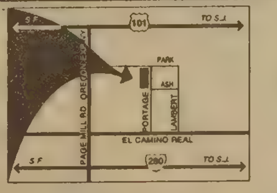

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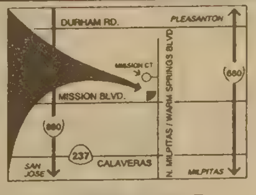

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Continued from page 158

disks (other formats are available). You need at least 8MB of free hard disk space to install the program, although it takes up slightly less than this amount after everything is decompressed and configured.

Graphics and Animation: 9
Sound: 9
User Interface: 8
Overall Value: 9

A Macintosh version is under development as well as expanded CD-ROM versions for both platforms.

Anyone who enjoys cycling should enjoy this program. It might even inspire a few sedentary computer-potatoes to get out and ride. (Eden Interactive, Inc., 1022 Natoma St., San Francisco, CA 94103. 1-800-743-3360)

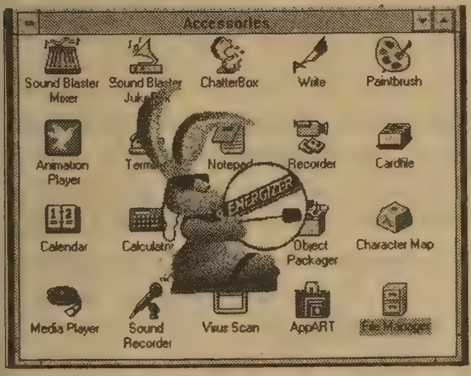
PC SOFTWARE REVIEWS

ENERGIZER BUNNY: SCREEN SAVER FOR WINDOWS

Published By: PC Dynamics
List Price: $24.95
Reviewed By: Woody Liswood

TV has come to Windows. If you like those Energizer Battery commercials, with the Energizer Bunny beating a drum across different scenes, you'll love this screen saver.

This software package offers a variety of bunnies—in size, appearance, action, such as the bunny parachuting, snorkeling, as well as many ways of just beating his or her way across your screen and various accompanying scenes.



There is no documentation. Just put the disk in, run setup from the file manager, and double click on the bunny icon to get into the program. From there, you can have it load automatically, and set bunny types, bunny scenes, and bunny sounds you want, or randomize everything so that each time you are surprised. If you really can't stand a bunny all the time, PC Dynamics has included a nice fish tank, called Watery World, and a reasonable laser show.

If a bunny marching and beating across your screen is not enough, you can also choose bunny bitmaps to install as wallpaper.

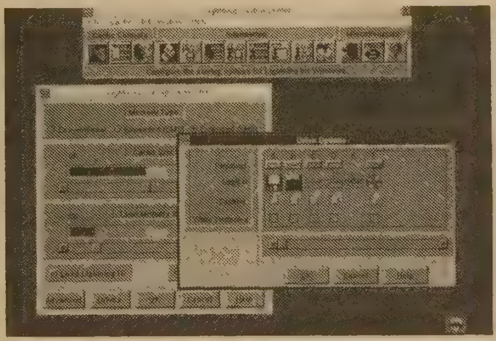
If you don't have a sound board, the program comes with a shareware version of a sound driver which lets you play the sounds through your PC speaker. While the sound quality of a PC's built-in speakers are generally poor when compared to sound boards, it does let you know what is going on. This sound drive will also let you play other sounds under Windows, which you might not have tried if you didn't have a sound board and speakers.

This is a nifty little program, which might cause a few laughs. (PC Dynamics, Inc., 31332 Via Colinas, Ste. 102, Westlake Village, CA 91362. 818/889-1741)

LIGHTNING FOR WINDOWS

Published By: Lucid Corp.
List Price: $129.95
Reviewed By: Woody Liswood

Lightning is a superfast diskcache program that has been around since the dark ages of microcomputers. If you haven't used a disk cache before, you should, since it really does speed things up, particularly databases which continually read and write to the disk.



The more your particular program uses the disk, the more speed improvement the disk cache will give you.

Lightning for Windows worked fine running on Windows with MS-DOS 5.0 and a beta of MS-DOS 6.0. I've used it with two differently compressed disks and had no problems. It will also cache a CD-ROM drive. This can greatly improve your multimedia system.

This program installs automatically, removing other disk caching programs you might be using, and adds a program group containing icons for the special features of Lightning.

A special setup icon allows you to fine tune Lightning for Windows. You can change options such as type of memory used, cache size, the last drive you wish to cache, the sector read ahead count, the write delay for delayed writes, turn on or off background writing, as well as flushing or locking any drive which has a cache buffer activated.

Another icon shows a bar graph of the disk space, and how much Lightning has increased disk accesses. Other icons show drive size and usage, memory usage by Windows, and monitors for the drives, memory, resources, and Lightning. The monitors are icons which have either a gauge or other graphic to show the amount of space, memory, etc. currently used by Windows.

Overall, I like Lightning for Windows much better than Smartdrv—the Microsoft supplied disk cache with MS-DOS 5.0. Since it also works with my beta DOS 6.0, I'm hooked. (Lucid Corp., 101 W. Renner Rd., Suite 450, Dallas, TX 75082. 214/994-8100)

STAR TREK—THE SCREEN SAVER FOR WINDOWS

Published By: Berkeley Systems
List Price: $59.95
Reviewed By: Woody Liswood

I am a great fan of screen savers, not because the modern monitor needs them, but because they add a variety of images to my life. And, since I am often working with confidential information, a screen saver can easily hide this data, even requiring a password, when I am called away from my desk.

Star Trek, The Screen Saver, from Berkeley Systems uses the After Dark screen saver image to provide a wide variety of animated images from the original Star Trek television show.

These images also have the associated sound files. On my multimedia Windows computer, it sounds great. On my office computer at work using the built-in speaker, the sound is only OK.

Installation to Windows is normal. It takes about 3.5MB to install everything, or you can customize the install to only do those things you want.

The preview option and password options are the same as in After Dark. I don't like their preview option because it leaves a preview and adjustment dialog box in the center of the screen, right in the middle of the images you are trying to preview.

The multimedia setup I use is the MicroVision ProAudio Spectrum. Star Trek worked with my setup immediately with no adjustments.

There are a variety of modules, such as tribbles, Brain Cells, a Final Exam which contains questions about Star Trek, a Medical Sick Bay Display, and Kirk on the Bridge. Also, as you go along, Spock might transport into any screen, walk around, and generally use the tricorder trying to figure out what is going on.

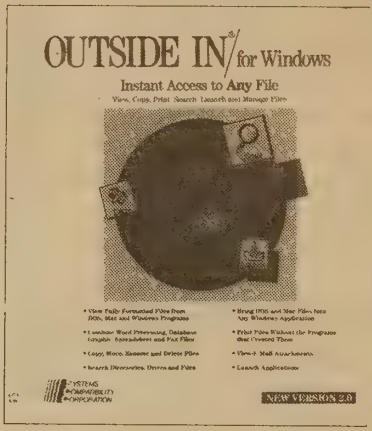
I love it. Just don't get caught by the Tholian Web. Live Long and Prosper. (Berkeley Systems, Inc., 2095 Rose St., Berkeley, CA 94709. 510/540-5535)

OUTSIDE IN FOR WINDOWS 2.0

Published By: Systems Compatibility
List Price: $89 (Upgrade from v1.0 is free; Network and DOS versions also available)
Reviewed By: Woody Liswood

One of the interesting problems we all face in the world of microcomputers is getting information from one application into another. In the DOS world, there have been a variety of utility programs introduced over the years that convert from one format to another.

Outside In for Windows takes information from a wide variety of file formats and lets you place that data into the Windows application you are working with. Outside In works with almost all Windows word processors, DOS word processors, Macintosh word processors, DOS and Windows spreadsheets, and databases. It runs as a standalone Windows program, or installs as part of your favorite word processor.



Here is a problem I was facing and which Outside In helped solve. I had a bunch of Q&A word processor files containing a series of policies we used over the past few years. I run a Windows system and Ami Pro is my word processor of choice. Since Ami Pro does not have a Q&A import filter I imported the Q&A file into Outside In and copied it to the clipboard. I then opened Ami Pro and pasted the Q&A document into the new policy manual I was writing. The document looked a bit funny, so I selected all of the Q&A text, told Ami Pro that this was now Normal text, and my Normal style sheet took effect. It happened almost as quickly as you are reading this paragraph.

Outside In also lets you view files, or even print the files or sections of the files you are viewing.

This is one of the utility programs that I feel is indispensable to any business environment—especially if you have been working with a variety of programs in the past and from time to time wish to take those old files and convert them into your Windows environment. (Systems Compatibility Corp., 401 N. Wabash, Ste. 600, Chicago, IL 60611. 312/329-0700, 1-800-333-1395) .

MACINTOSH HARDWARE REVIEW

TURBO 040 & FASTCACHE TURBO

Manufactured By: Daystar Digital

List Price: $1599 (33MHz Turbo 040); $399 (33MHz FastCache card)

Reviewed By: Matthew Leeds

Daystar has a reputation for building the best accelerators in the Macintosh market. They consistently test out as among the fastest and always the most compatible in tests run by every Macintosh magazine. Their release of a 68040-based line of accelerators extends the range of their products.

The Turbo 040 is available in 25MHz and 33MHz versions now, with a 40MHz version coming later this year (once Motorola releases a 40MHz 68040). Each can accept a static RAM cache card that improves its performance by 10%-40%. The combination of the Turbo 040 and FastCache card together can improve the performance of a Mac IIci by over 400%, well past that of a Quadra 950.

In all of the testing I performed I found no software incompatibilities. If you are using some older programs you may take advantage of the QuadControl software provided with the card to toggle the caches on the 68040 chip to improve compatibility (with a performance penalty). Daystar also includes system software that allows applications that do not use the 68040's integrated math functions to take advantage of the chip's speed for floating point math routines.

Versions of the Turbo 040 are available for all Mac II family machines, the Performa 600, and the SE/30. I highly recommend this accelerator both for its performance and its compatibility. (Daystar Digital, Inc., 5556 Atlanta Hwy., Flowery Branch, GA 30542. 1-800-962-2077)

RAM POWERCARD

Manufactured By: Daystar Digital

List Price: $499

Reviewed By: Matthew Leeds

There are times when even the fastest hard drive is just not fast enough. Digitizing QuickTime movies, doing database sorts, image processing in Photoshop, or compiling programs during software development can turn your hard drive into a bottleneck. A RAM drive can remove that bottleneck.

The RAM PowerCard delivers zero second access times and provides data transfer rates several times that of a hard drive. It uses memory SIMMs of up to 16MB, and has SIMM sockets for up to sixteen SIMMs. This means you can stuff up to 256MB of memory on a single RAM PowerCard, and you can gang the memory on more than one card together (if you can fit more than one card in your machine). Two versions of the card are available; to use 16MB composite SIMMs you need the version with horizontal SIMM sockets. It can take up to three NuBus slots since the SIMMs stick out quite a ways.

In testing the RAM PowerCard I compared it to a fast hard drive and a RAM drive created from memory on the motherboard. As you can see from the test results, the RAM PowerCard is much faster than a hard drive but about three times slower than a RAM drive created from motherboard memory. The sustained read and write figures are in MB/sec, the average access and seek figures are in milliseconds.

Volume	Sust. Read	Sust. Write	Avg. Access	Avg. Seek	Reads/Sec	Writes/Sec
Hard drive	1504	1448	17	9.8	690	93
RAM PowerCard	3725	3899	0	N/A	3226	3333
RAM drive	13831	13688	0	N/A	9091	8333

Clearly you need to analyze when you would want to use motherboard RAM for a RAM drive and when you would want to add a RAM PowerCard. One possible use would be as a source of high-speed virtual memory if all of your motherboard RAM was in use. Another would be if you had maxed out the memory on your motherboard, all was in use for applications, and you still needed a RAM drive. I found the Daystar RAM PowerCard to be well designed, easy to install, and simple to use. (Daystar Digital, Inc., 5556 Atlanta Hwy., Flowery Branch, GA 30542. 1-800-962-2077)

AMIGA SOFTWARE REVIEWS

PROFESSIONAL DRAW 3.0

Published By: Gold Disk

List Price: $199.95

Reviewed By: Douglas J. Nakakihara

Gold Disk has once again updated its standard setting structured-drawing program Professional Draw (ProDraw). Version 3.0 is chockfull with enhancements including a much needed Undo/Redo function. Like its cousin Professional Page (ProPage), Gold Disk's desktop publishing program, ARexx scripts called "Genies" are featured. Essentially every aspect of ProDraw can be controlled through ARexx. Over forty powerful Genies come with ProDraw and do things like automatic Avery label generation, style tag control, scaling, change point spacing, etc. These can be edited or you can write your own.

ProDraw will now use Compugraphic (CG) fonts without conversion. Adobe Type 1 fonts are also supported, but you must first convert them to CG format using the supplied FontManager program. (Note that you must have a complete metric file for the conversion to work.) Also, text handling has been improved significantly.

An exciting new feature is a hot-link between ProPage and ProDraw. With a keystroke, clips can be transferred from ProPage to ProDraw for editing. ProDraw can also load Encapsulated PostScript files (EPS), but they can't be displayed or edited. I'm hoping the next version will allow you to edit EPS images. A real time saver is ProDraw's new ability to set the display mode of individual objects (WYSIWYG/outline). Previously, this was a global-only setting.

Other improvements include improved bit-map image handling, gradient color fills, PANTONE color support, and better autotracing. This is a first class program and is

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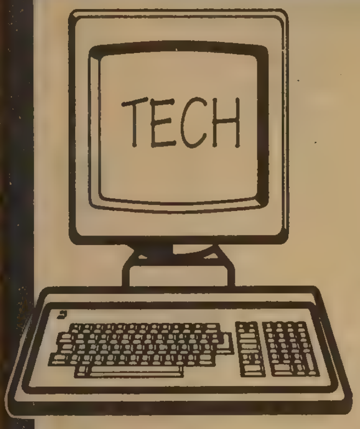

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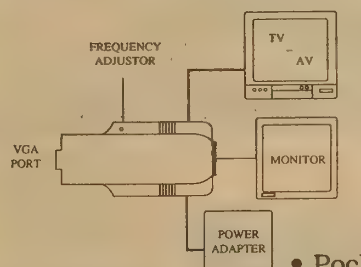

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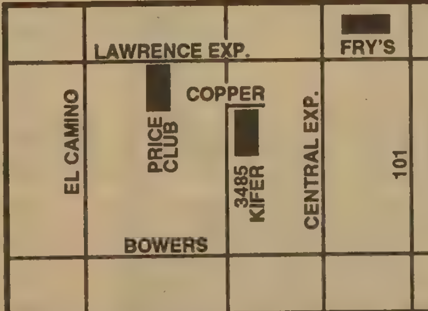

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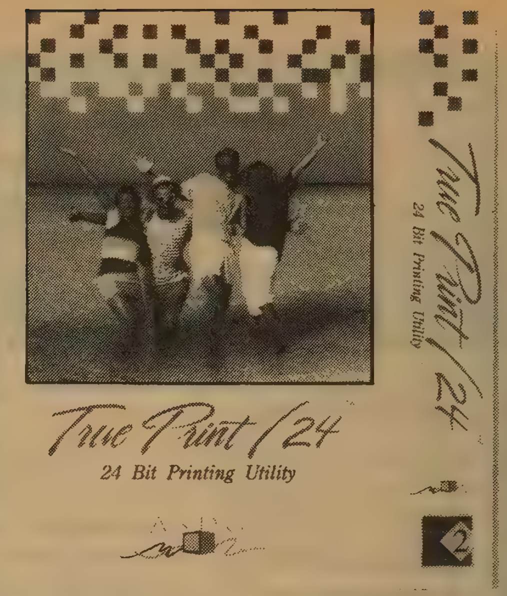

TRUEPRINT/24

Published By: ASDG, Corp.
List Price: $89
Reviewed By: Douglas J. Nakakihara

Normally, the Amiga can print 4 bitplanes (16 colors) in grayscale or 12 bitplanes (4096-colors) in color. This presents a problem if your image is 24 bit. However, with TruePrint/24 (TP24) you can output 256-color grayscale on a black-and-white printer. Color printers will be able to print the full 24-bits of color (i.e., 16.7 million colors).

The main screen consists of a ruled background with an outlined box, plus a control panel. The box represents the image. The image's output size can be changed by dragging one of the box's handles with the mouse pointer or by entering specific size data. If desired, the image's aspect ratio can be retained automatically when you adjust the output size.

Each square on the background grid indicates the size of the printable area of one sheet of paper. The grid's relative size is adjustable. The image's position on the page can be changed by dragging the box. Basic image processing is also featured, like dithering, orientation, brightness, contrast, and gamma, plus adjustment for red, green, and blue levels.

TruePrint/24 also features the ability to enlarge a picture and print it on multiple sheets of paper. This feature is accessed by setting the print dimensions larger than the paper size. It will automatically tell you how many sheets of paper will be required.

TruePrint/24 is identical to the Prefprinter saver option in Art Department Pro. So I'd only recommend it, if you don't already have AD Pro. TP24 works with most Preference-supported printers. (ASDG, Corp., 925 Stewart St., Madison, WI 53713. 608/273-6585)

MACINTOSH SOFTWARE REVIEWS

PREMIERE V2.0

Published By: Adobe Systems
List Price: $695
Reviewed By: Matthew Leeds

Unless you've been living in a cave for the last year or so, you've probably heard of QuickTime. While this new data format standard has been incorporated into word processors, spreadsheets, and data base applications, for me the most exciting application has been QuickTime editing, with the promise of making your own movies on a Mac. This latest version of Premiere fulfills that promise with a vengeance.

Premiere has four main windows: the Project window where you load the elements you will be working with (movies, sound effects, graphics, and animations); the Clip window where you store elements; the Construction window where you assemble these elements on a timeline; and the Special

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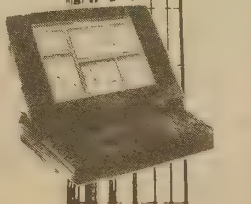

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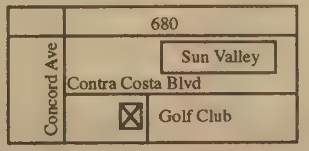

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- 1024•768 .28DPI 14" Color Mon.
- 512K SVGA Card
- Enhanced Case w/Power Supply

Options

Non-Interlaced Monitor	Add $25
1MB SVGA Card	Add $20
Local Bus (1MB)	Add $80
Local Bus S3 (1MB)	Add $120
200MB Hard Drive	Add $80
340MB Hard Drive	Add $220

SUPER SALE

486DLC-40/64K ISA	$968
486DLC-33/64K ISA	$898
486SX-33/64K ISA	$978
486SX-25/64K ISA	$938
386-40/64K CACHE	$838
386DX-25	$828
386SX-33	$738

- Motherboard w/CPU
- 4MB RAM 70NS (2MB for 386SX)
- 1.2MB and 1.44MB FDD
- IDE Controller w/2S/1P/1G
- 80MB 16MS Hard Drive
- 101-Key Enhanced Keyboard
- 1024•768 .39DPI 14" Color Mon.
- 512K SVGA Card
- Enhanced Case w/Power Supply

Options

1MB SVGA Card	Add $20
.28DPI SVGA Monitor	Add $40
Viewsonic 6E Monitor	Add $115
40MB Hard Drive	Less $40
130MB Hard Drive	Add $30
200 MB Hard Drive	Add $110

NOTEBOOK COMPUTERS

486DX-33/4MB RAM/120MB HD	$2,468
486SLC-25/2MB RAM/80MB HD	$1,388
386SX-25/4MB RAM/120MB HD	$1,238
386SX-25/4MB RAM/80MB HD	$1,138
386SX-25/2MB RAM/80MB HD	$1,088

Features

- 1.44MB Floppy Drive
- VGA 640x480 Resolution
- DOS 5.0
- Serial & Parallel Port
- Please Call for Details

TERMS AND CONDITIONS

1. One year parts and labor warranty on systems.
2. Knowledgeable technical support engineers in service.
3. Prices and availability subject to change w/o notice.
4. Shipping, insurance and COD charges are extra and non-refundable. Prices reflect cash discounts.
5. Return shipping must be insured, prepaid and bearing an RMA# on the shipping label.
6. Defective items replaced or repaired at our discretion.
7. No responsible for typos.
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SYSTEM	M/B + CPU	BASIC SYSTEM	BASIC SYS +40MB HDD + 12" MONO & MGP CARD	BASIC SYS + 40MB HDD + VGA CARD & MONITOR	BASIC SYS + 40MB HDD + SVGA CARD & MONITOR	BASIC SYS +80MB HDD + SVGA CARD & MONITOR	BASIC SYS +120MB HDD + SVGA CARD & MONITOR	BASIC SYS W/4MB RAM 1.2 & 1.44 FDD +130MB HDD +SVGA CARD & MONITOR	BASIC SYS W/4MB RAM 1.2 & 1.44 FDD +170MB HDD +SVGA CARD & MONITOR	BASIC SYS W/4MB RAM 1.2 & 1.44 FDD +200MB HDD +SVGA CARD & MONITOR
486DX2-66/128C EISA	$718	$878	$1,096	$1,196	$1,234	$1,282	$1,306	$1,446	$1,480	$1,520
486DX-50/128C EISA	618	778	996	1,096	1,134	1,182	1,206	1,346	1,380	1,420
486DX2-50/128C EISA	598	758	976	1,076	1,114	1,162	1,186	1,326	1,360	1,400
486DX-33/128C EISA	498	658	876	976	1,014	1,062	1,086	1,226	1,260	1,300
486DX2-66/64C ISA	598	758	976	1,076	1,114	1,162	1,186	1,326	1,360	1,400
486DX-50/64C ISA	498	658	876	976	1,014	1,062	1,086	1,226	1,260	1,300
486DX2-50/64C ISA	478	638	856	956	994	1,042	1,066	1,206	1,240	1,280
486DX-33/64C ISA	378	538	756	856	894	942	966	1,106	1,140	1,180
486DLC-40/64C ISA	278	438	656	756	794	842	866	1,006	1,040	1,080
486DLC-33/64C ISA	198	358	576	676	714	762	786	926	960	1,000
486SX-33C ISA	274	434	652	752	790	838	862	1,002	1,036	1,076
486SX-25C ISA	224	384	602	702	740	788	812	952	986	1,026
386DX-40/64C	144	304	522	622	660	708	732	872	906	946
386DX-25	134	294	512	612	650	698	722	862	896	936
386SX-33	86	248	466	566	604	652	676	816	850	890
286-16	58	224	442	542	580	628	652	792	826	866

BASIC SYSTEM CONFIGURATION:
Motherboard & CPU, 1MB (512KB for 286 systems) memory installed, 1:1 2HD/2FD controller, 1.2MB or 1.44MB Floppy Drive, Internal Clock/Calendar, Enhance Case with Power Supply, and 101-Key Enhanced Keyboard.

VIDEO OPTIONS

14" Mono monitor	90
14" VGA Mono Monitor	106
14" VGA monitor w/16-bit VGA card	200
14" SVGA monitor with 512k card	238
VGA-256K / 512K	26 / 36
1M SVGA card (1024•768•256)	54
Window Accelerator w/1MB	58
Diamond Speed Star 24X w/ Hi-Color	142
Diamond Stealth 24 w/1MB	150
Diamond Stealth 24 VLB w/1MB	170
Diamond Viper VLB w/2MB	418
Orchid Fahrenheit VA801 W/1MB	142
Orchid Fahrenheit VLB w/1MB	170
Orchid P9000 VLB w/3MB	428
ATI Graphic Ultra w/ Mouse	218
ATI Graphic Ultra Plus w/1MB	248
ATI Graphic Ultra Pro w/2MB	378
ATI Graphic Ultra Pro VLB w/1MB	298
Nanao F550i (17", 1280•1024, 0.28)	1,016
Nanao F560i (17", 1280•1024, 0.26)	1,672
NEC 3FGX / 4FG	604 / 710
NEC 5FG OEM / Original	1,282 / 1,358
MAG 15F (15", 1280•1024, 0.28)	536
MAG 17F (17", 1280•1024, 0.26)	1,002
Sony CPD 1304S / 1430	528 / 582
Sony CPD 1604S	938
HITACHI CM-2085M+ (20")	1,248
HITACHI CM-2187M (21")	2,148
Standard VGA (640•480) Monitor 0.51	174
Super VGA (1024•768) Monitor 0.39	202
Super VGA (1024•768) Monitor 0.28	240
Super VGA Non-Interlaced Monitor 0.28	264
Viewsoic 4 E	274
Viewsoic 5 E	374
Viewsoic 5 +	474
Viewsonic 6 E	314
Viewsonic 6 FS	524
Viewsonic 7	944
Viewsonic 8	1,504

HARD / FLOPPY DRIVE ADAPTERS

IDE 2FD/2HD Cache Controller	$106
IDE 2FD/2HD with 2S/1P/1G	13
VESA Local Bus IDE	53
MFM 2FD/2HD	36
Ultrastor ESDI w/32K Cache (ISA)	150
Adaptec SCSI 1542BK w/Kit (ISA)	226
Adaptec 1542BK+	304
Adaptec SCSI 1742 (EISA)	402
Bustek SCSI (EISA)	270

NEW HARD DRIVES

40mb/28ms or 52mb/19ms (IDE)	$118 / 146
80mb/18ms or 100mb/18ms (IDE)	166 / 184
120mb/16ms (IDE)	190
130mb/16ms (IDE)	194
170mb/16ms (IDE)	228
200mb/16ms or 240mb/15ms (IDE)	268 / 298
200mb/16ms (SCSI)	348
340mb/15ms or 500mb/13ms (IDE)	408 / 738
1.2GB/13ms (SCSI)	1,188

PRINTERS

Citizen GSX-190 (9-Pin)	$158
Citizen GSX-230 (24-Pin) Quiet	248
Citizen GSX-240 (24-Pin) Quiet	318
Citizen GSX-145 (24-Pin)	388
Color Option for Citizen Printer	48 / 68
Panasonic KX-P1123	208
Panasonic KX-P1124 i / 1624	288 / 364

MATH COPROCESSORS

Intel 80287-10	$42
Intel 387SX-25 / 20 / 16	74
Intel 387DX-33 / 25 /20 / 16	78
CYRIX 387DX-40 / 33	84 / 66
CYRIX 387SX-25 / 16	66 / 66

KEYBOARDS

101 Enhanced Keyboard	$20
Maxiswitch / Keytronics	30 / 32
Focus 2001 / 9000	38 / 62
Omnikey 101 / 102 / Ultra	66 / 66 / 86

MISCELLANEOUS

2400 Modem (w/9600 Send Fax)	$29
Fax Modem (9600 Fax, 2400 Modem)	49
Fax Modem (14,400 Fax, 14,400 Modem)	168
3-button Mouse	10
Mini Tower Case w/200W PS	52
Desktop AT Case w/200W PS	54
Medium Tower Case w/230W PS	82
Full Tower Case w/250W PS	112
Logitech Mouseman Serial/Bus	59 / 59
Logitech Trackman	74
Colorado Tape Backup DJ-10 (120mb)	148
Colorado Tape Backup DJ-20 (250mb)	196
Colorado Traker (120mb/250mb)	338 / 394
ATI Sound Card Pro	108
Creative Labs Sound Blaster	78
Sound Blaster Pro w/MIDI Kit	174
Creative Labs CD-ROM Upgrade Kit	442
SONY CD-ROM CDU031 / 541	228 / 408
16-Bit Ethernet Card COAX/10Base-T	65

HOURS: Monday - Friday: 8am to 6pm
Saturday: 10am to 4pm

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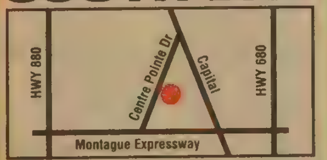

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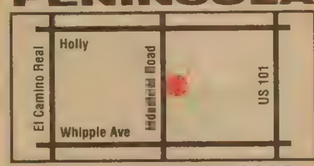

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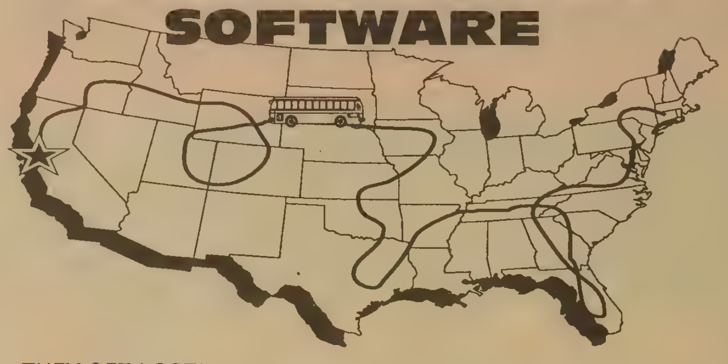
FUNNY THINGS HAPPEN TO PEOPLE ON THE WAY TO HERB'S DISCOUNT SOFTWARE

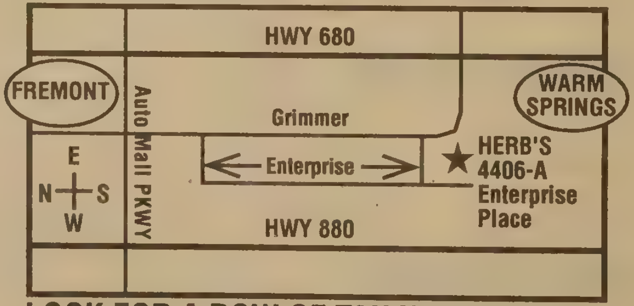


- THEY GET LOST!
- THEY SEE PARTS OF FREMONT THEY NEVER KNEW EXISTED
- THEY RUN OUT OF GAS
- THEY PASS THE NUMI PLANT
- THEY SEE THE HIGHWAY PATROL TRUCK WEIGHING STATION
- THEY STOP FOR LUNCH AND SOMETIMES DINNER TOO!
- THEY AGE AND HAVE BIRTHDAYS
- THEY SEE PRETTY SUNSETS AND SUNRISES
- THEY MEET OTHER PEOPLE TRYING TO FIND HERB'S
- THEY RECAP THEIR TIRES
- THEY STOP POLICE, MAIL CARRIERS, UPS DRIVERS, AND ASK FOR DIRECTIONS
- THEY WATCH THE SEASONS PASS
- THEY LEARN THAT DURHAM RD. WAS RENAMED AUTO MALL PARKWAY
- THEY FIND THERE REALLY IS A STREET NAMED GRIMMER
- THEY DISCOVER THE DIFFERENCE BETWEEN ENTERPRISE PLACE AND STREET
- THEY PUT THEIR CHILDREN UP FOR ADOPTION
- THEY BUY MAPS
- THEY LET THEIR FAMILIES KNOW THEY'LL BE LATE FOR DINNER
- THEY ENJOY THE CHALLENGE
- THEY CURSE AND CRY

BUT, STILL THEY COME AND COME AND COME FOR OVER 10 YEARS THEY'VE BEEN COMING. MANY HAVE MADE IT, SOME HAVE NOT.

THINK YOU ARE UP TO THE CHALLENGE? COME ON, GIVE IT A TRY. HERE'S THE TREASURE MAP TO HERB'S WHERE THE GREAT BUYS ARE BURIED, AND WELL WORTH DIGGING OUT!

IF YOU GET LOST, GIVE US A CALL, WE'LL DO OUR BEST TO GET YOU HERE.



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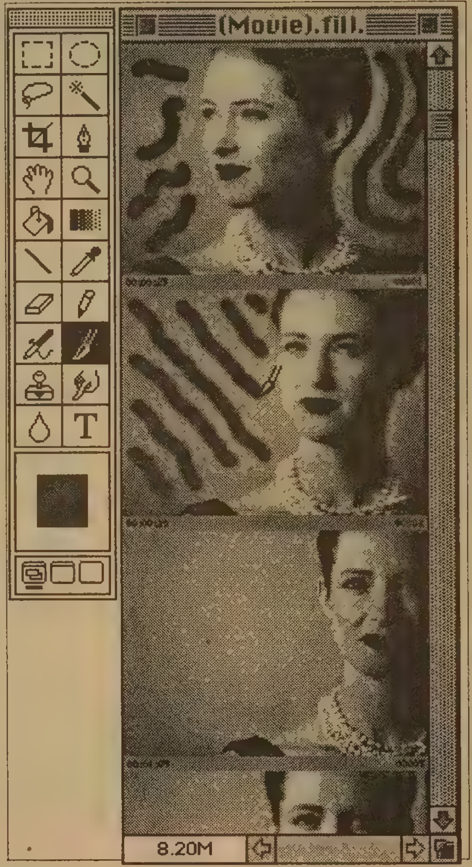
VISA MasterCard

Effects window which provides a selection of effects that can be applied to elements or used as transitions.



The list of new features in Premiere seems to go on forever. You can now record QuickTime movies from within Premiere. Support for SMPTE time code and edit decision lists (EDL) includes export of EDL's in professional formats. Machine control for professional and consumer video decks includes VISCA Hi8 decks. New import and export features include numbered PICT files and a new file format, FilmStrip, for import and export to/from Photoshop. A title creation module is included, with titles being anti-aliased and having drop shadows; you can also import EPS files. A motion control module lets you create flying video pages, and other new filters include a mesh warp effect.

There is support for the new generation of video digitizing boards that offer 30fps of full-screen video and support for 16-bit audio. The matting has been improved with professional quality keying for chroma, luminance, and alpha channels. The Construction window has a new preview feature that allows you to 'scrub' through your movie by dragging the cursor across the top of the window.

Premiere combined with a second-generation digitizing board lets you edit and output video productions. It is quite simply the premiere QuickTime editing application and this latest version moves it into the big leagues. (Adobe Systems, Inc., 1585 Charleston Rd., PO Box 7900, Mountain View, CA 94039. 415/961-4400)

NORTON ESSENTIALS FOR POWERBOOK

Published By: Symantec
For: Macintosh PowerBook (any model)
List Price: $129
Reviewed By: Mike Markowitz

Norton Essentials for PowerBook is a collection of utilities designed to extend battery life, enhance usability, and keep files on your PowerBook synchronized with files on another Macintosh. The program consists of a Control Panel and a group of INITs installed in your System folder from a single floppy disk; it takes up only about 350K of precious hard disk space after installation.

The Backlight Dimmer and Battery Saver, working together, can extend the life of a charge up to 40%. The battery gauge claims to be more accurate than the simple DA provided by Apple, as well as providing six options for displaying remaining battery life. Battery Saver allows you to set the number of minutes of idle time until the

Continued on page 279

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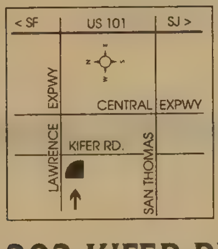

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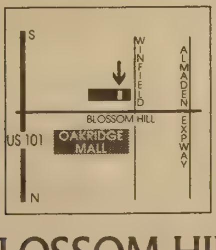

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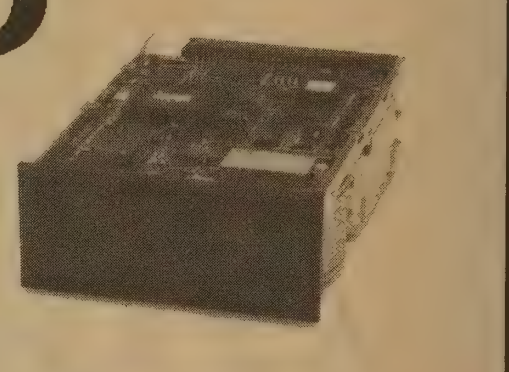

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- ▶3.5" HH Drive
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- ▶5-Year Warranty

IDE **$818**
M2624T

SCSI **$828**
M2624FA

SCSI

	MODEL	CACHE	SPEED	SIZE	INTERNAL	EXTERNAL
425MB	M2623FA	240K	11ms	3.5"	$799	$899
425MB	***M2623SA***	***240K***	***11ms***	***3.5"***	***$729***	***$829***
520MB	M2624FA	240K	11ms	3.5"	$828	$928
1.2GB	M2694SA	256K	10ms	3.5"	$1599	$1699
1.2GB	M2266SA	256K	14ms	FH	$1189	$1289
2.0GB	M2652SA	256K	11ms	FH	$2099	$2299
2.4GB	M2654SA	256K	12ms	FH	$2499	$2699

IDE

	MODEL	CACHE	SPEED		INTERNAL
330MB	M2622T	64K	12ms	3.5"	$599
425MB	M2623T	64K	12ms	3.5"	$779
520MB	M2624T	64K	12ms	3.5"	$818

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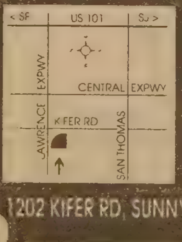

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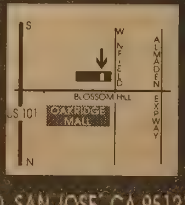

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- ▶ 3.5"X1"
- ▶ 15ms access seek time

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SCSI

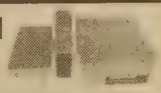
	MODEL	CACHE	SPEED	SIZE	INTERNAL	EXTERNAL
130MB	7120S	64K	15ms	3.5X1"	$239	$349
213MB	7213S	64K	15ms	3.5X1"	$339	$449
340MB	LXT340S	64K	15ms	3.5"	$569	$669
535MB	LXT535S	64K	12ms	3.5"	$929	$1039
540MB	MXT-540	256K	8ms	3.5X1"	$1099	$1199
1.2GB	MXT-1240	512K	8ms	3.5"	$1549	$1649
1.2GB	PO-12S	256K	13ms	FH	$1179	$1379
1.7GB	P1-17S	256K	13ms	FH	$1439	$1639

IDE

	MODEL	CACHE	SPEED	SIZE	INTERNAL
120MB for Notebooks	25120A	32K	15ms	2.5"	$329
130MB	7120A	64K	15ms	3.5X1"	$199
213MB	7213A	64K	15ms	3.5X1"	$275
245MB	7245A	64K	15ms	3.5"	$308
340MB	LXT340A	64K	15ms	3.5"	$549
535MB	LXT535A	64K	12ms	3.5"	$879

EXTERNAL SUBSYSTEMS

For MAC, SUN
IBM Comp.



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7120S	120MBSubSystem	$349
7213S	213MBSubSystem	$459
LXT340S	340MB SubSystem	$699
LXT535S	535MBSubSystem	$1039
MXT-540	540MBSubSytem	$1159
MXT-1240	1.2GBSubSystem	$1699
PO-12S	1.2GBSubSystem	$1439
P1-17S	1.7GB SubSystem	$1679

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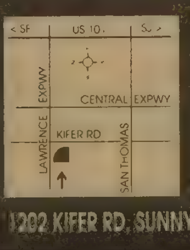

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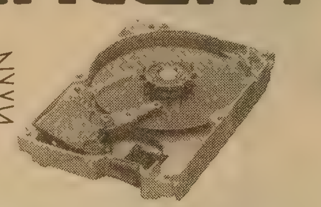

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IDE

CAPACITY	M/N	CACHE	SPEED	SIZE	PRICE
80MB	GO80	32K	16ms	2.5"	$259
120MB	GO120	32K	16ms	2.5"	$329
160MB	GO160	32K	16ms	2.5"	$429
42MB	ELS42A	32K	19ms	3.5X1"	$119
52MB	LPS52A	64K	11ms	3.5X1"	$139
85MB	ELS85A	32K	17ms	3.5X1"	$179
120MB	LPS120A	256K	*Fast*	3.5X1"	$279
127MB	ELS127A	32K	17ms	3.5X1"	$219
170MB	ELS170A	32K	17ms	3.5X1"	$239
240MB	LPS240A	256K	*Fast*	3.5X1"	$319
425MB	PD425A	256K	<11	3.5"	$859
525MB	LPS525AT	256K	*FAST*	3.5X1"	$999

SCSI

CAPACITY	M/N	CACHE	SPEED	SIZE	INT.	EXT.
42MB	ELS42S	32K	19ms	3.5X1"	$159	$279
52MB	LPS52S	64K	11ms	3.5X1"	$189	$309
85MB	ELS85S	32K	17ms	3.5X1"	$189	$309
105MB	LPS105S	64K	<11ms	3.5X1"	$239	$359
120MB	LPS120S	256K	*Fast*	3.5X1"	$279	$399
127MB	ELS127S	32K	17ms	3.5X1"	$259	$379
170MB	ELS170S	32K	17ms	3.5X1"	$289	$409
240MB	LPS240S	256K	*Fast*	3.5X1"	$349	$449
425MB	PD425S	256K	<11	3.5"	$859	$959
525MB	LPS525	256K	*Fast*	3.5"X1"	$899	$999
700MB	PD700	256K	<10	3.5"	$1199	$1299
1.2GB	P1225	512	<10	3.5"	$1499	$1549

Seagate

Factory new with full factory warranty

IDE

CAPACITY	M/N	CACHE	SPEED	SIZE	PRICE
42MB	ST351	32K	19ms	3.5X1"	$139
107MB	ST3120	64K	15ms	3.5X1"	$209
130MB	ST3144A	64K	15ms	3.5X1"	$229
240MB	ST3283A	256K	12ms	3.5X1"	$389

SCSI

CAPACITY	M/N	CACHE	SPEED	SIZE	INT.	EXT.
240MB	ST3283N	256K	12ms	3.5X1"	$399	$499
670MB	ST4766N	256K	14ms	FH	$1139	$1339
670MB	ST4767N	256K	11ms	FH	$1399	$1599
1.2GB	ST11200N	256K	10ms	3.5"	$1249	$1349
1.2GB	ST41200N	256K	14ms	FH	$1149	$1349
1.6GB	ELITE-I	X	11ms	FH	$1899	$2099
1.6GB	ST41651	256K	14ms	FH	$1749	$1949
2.1GB	ST42100N	256K	14ms	FH	$1969	$2169
2.4GB	ELITE-II	X	11ms	FH	$2599	$2799
3.4GB	ELITE-III	X	11ms	FH	$3699	$3899
3.5" Fast SCSI-2 JUST IN						
450MB	ST3550N	256K	10ms	3.5X1"	$849	$949
535MB	ST3601N	256K	10ms	3.5X1"	$949	$1049

MICROPOLIS

Brand new with 5-year factory warranty

SCSI-II / *Fast* SCSI-II

CAPACITY	M/N	RPM	SPEED	SIZE	INT.	EXT.
340MB	MC1684	3600	14ms	HH	$1099	$1209
670MB	MC1624	3600	14ms	HH	$1149	$1259
1.2GB	MC2112	5400	10ms	3.5"	$1449	$1549
1.2GB	MC1598	3600	15ms	FH	$1399	$1599
1.5GB	MC1528	3600	15ms	FH	$1799	$1999
1.6GB	MC1908	5400	11ms	FH	$1899	$2099
2.0GB	MC1548	3600	14ms	FH	$1949	$2149
2.4GB	MC1924	5400	11ms	FH	$2699	$2899
3.6GB	MC1936	5400	11ms	FH	$3999	$4199

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Featuring **60MB IDE**
CP30064
$149

IDE

CAPACITY	M/N	CACHE	SPEED	SIZE	PRICE
40MB	CP3000	32K	25ms	3.5X1"	$135
80MB	CP30084	64K	19ms	3.5X1"	$179
120MB	CP30104H	32K	19ms	3.5X1"	$199
170MB	CP30174E	64K	17ms	3.5X1"	$229
212MB	CP30204	256K	12ms	3.5X1"	$309
250MB	CP30254	64K	14ms	3.5"	$319
540MB	CP3544	256K	12ms	3.5"	$889
540MB	CP30544	256K	<12ms	3.5X1"	$CALL

SCSI

CAPACITY	M/N	CACHE	SPEED	SIZE	INT.	EXT.
40MB	CP3040	32K	25ms	3.5X1"	$159	$269
80MB	CP30080	32K	19ms	3.5X1"	$219	$329
170MB	CP30170	64K	17ms	3.5X1"	$289	$399
212MB	CP30200	256K	12ms	3.5X1"	$349	$449
540MB	CP3540	256K	12ms	3.5"	$939	$1049

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Accept only the finest... Caviar

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IDE **Caviar Series**

CAPACITY	M/N	CACHE	SPEED	SIZE	PRICE
120MB	WD2120	64K	<14	3.5X1"	$239
170MB	WD2170	64K	<15	3.5X1"	$269
212MB	WD2200	64K	12ms	3.5X1"	$309
250MB	WD2250	64K	14ms	3.5X1"	$339
340MB	WD2340	64K	12ms	3.5X1"	$469

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BEST VALUE *Superior Quality and Value*

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SCSI-II

CAPACITY	M/N	CACHE	SPEED	SIZE	INT.	EXT.
877MB	MK438FB	512K	12ms	3.5"	$1028	$1128
1.2GB	MK538FB	512K	12ms	3.5"	$1299	$1399

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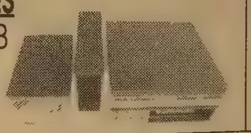

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No more down time...

If your covered peripheral should fail within the period, NCA will replace or repair the unit within 8 working hours.*

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When one year is just not good enough.
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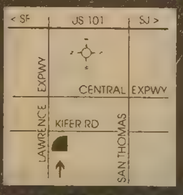

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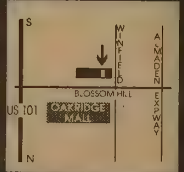

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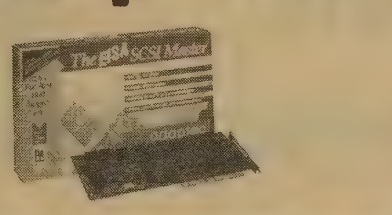
CONTROLLER SUPER SOURCE

SCSI CONTROLLERS

adaptec



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MODEL	DESCRIPTION	PRICE
1522	16-BIT 7HD/2FD KIT	$159
1542BK	16-BIT BUS MASTER 7HD/2FD KIT	$259
1542B+	1542BK+COREL SCSI	$329
1542C	BUS MASTER COMPLETE KIT	$279
1640	MICROCHANNEL FOR PS/2, 7HD	$329
1742	EISA KIT, 32 BIT, 7HD/2FD	$439

aaa always technology

SCSI CONTROLLERS

MODEL	DESCRIPTION	PRICE
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AL1000	SCSI *TO* PARALLEL W/BACKUP SOFTWARE	$169

FUTURE® DOMAIN

SCSI CONTROLLERS

MODEL	DESCRIPTION	PRICE
MC600	*FOR* PS/2, CARD	$179
TMC850	8 BIT CARD W/BIOS	$59
TMC850	8 BIT W/O BIOS	$39
TMC1670	KIT 2HD/2FD	$159
TMC1680	16 BIT CARD	$169
TMC1680	16 BIT, 7HD/4FD KIT	$249
TMC7000	32 BIT, EISA KIT	$299

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T130	8 BIT, HIGH PERF., 7HD	$79
T160	16 BIT, HIGH PERF.	$CALL
T228	MICROCHANNEL, 7HD	$159
T260	16-BIT, MICROCHANNEL	$CALL
T338	PARALLEL PORT to SCSI ADAPTER	$119
T348	PARALLEL PORT to SCSI PLUS	$179
SCSI-Works W/TapeMate S/W for Tape Back-up		$69

UltraStor

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MODEL	DESCRIPTION	PRICE
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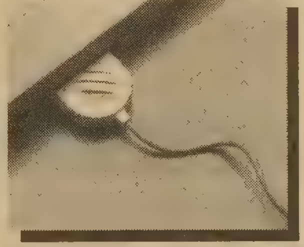

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16-Bit LAN Adapter Cards For Thick And Thin Coax **$99**

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IDE CONTROLLERS

MODEL	DESCRIPTION	PRICE
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211	2HD/2FD W/2SERIAL, 1PAR, 1GAME	$25
NCL53	SMART CONT. W/BIOS EASY INSTALL	$49
222	2HD/2FD/UP TO 2.88MB WITH I/O	$39
223	2HD/2FD for VESA LOCAL BUS I/O	$79

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DC-200	CACHING (0MB, up to 16MB)	$139
DC-2032	CACHING WITH I/O, 4HD/3FD	$159
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MODEL	DESCRIPTION	PRICE
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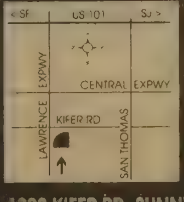

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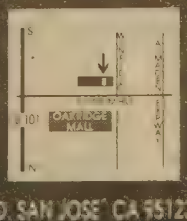

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  - Where in the world Carmen Sandiego?™
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Fully Integrated Multimedia Component System

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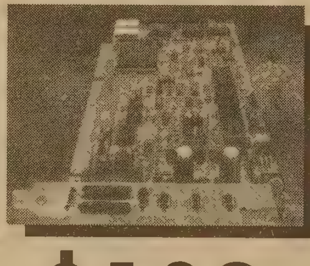

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- Sony CD-ROM (internal) NEC CD-ROM (external)
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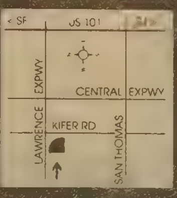

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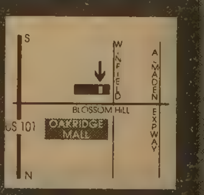

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Internal Kit

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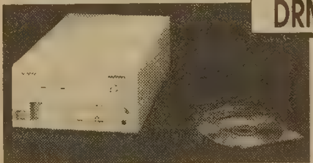

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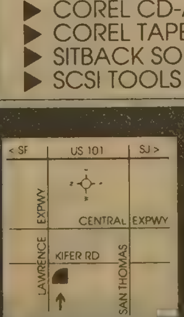

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128Mbyte, 3.5" Rewritable Optical Disk Drive

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- ▶ 3600 RPM
- ▶ SCSI Optical

INTERNAL	EXTERNAL (no cart.)
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CAPACITY	SINGLE	5-PACK
128MB	$49	$239
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650MB	$145	$699

FUJITSU

128Mbyte, 3.5" Rewritable Optical Disk Drive

- ▶ M2511A
- ▶ SCSI 3.5"X1"
- ▶ Fits in floppy slot
- ▶ 30ms Speed

$1029

REWRITABLE OPTICAL CARTRIDGES

CAPACITY	SINGLE	5-PACK
128MB	$49	$239
128-Optical Lens Cleamer	$29	$139

COREL SCSI SOFTWARE KIT

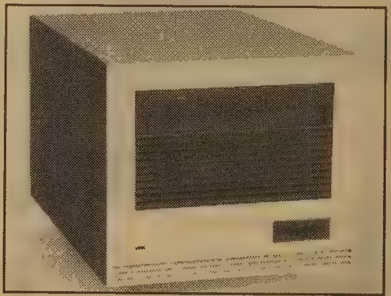
COREL SCSI! APPROVED PRODUCT

- ▶ 8 BIT SCSI CARD
- ▶ COREL SCSI DRIVERS
- ▶ COREL SCSI UTILITIES
- ▶ COREL CD-AUDIO for WINDOWS
- ▶ COREL TAPE BACKUP
- ▶ SITBACK SOFTWARE
- ▶ SCSI TOOLS for WINDOWS

$99

Multifunction Magento-Optical Disk Drive for 1-Gbyte and 650-Mbyte Rewritable and WORM Disk Cartridges, With up to 4-Mbytes Read/Write cache

Maxoptix™



- ▶ Unlimited Data Storage
- ▶ External SCSI Subsystem
- ▶ One year factory warranty
- ▶ 25-Year life of Glass Media
- ▶ Embedded SCSI/SCSI-2
- ▶ Data Transfer of up to 13.2Mbit/Sec.
- ▶ Ultimate Back-up for NOVEL (Ready-to-Boot Backup)

1GB CART.
glass/poly
$199

TAHITI IIM - Multifunction

- ▶ 1MB Read/WriteCache
- ▶ External SCSI
- ▶ 35ms

$2799

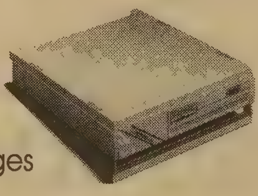
TAHITI IIM - Multifunction

- ▶ 4MB Read/Write Cache
- ▶ External SCSI
- ▶ 36ms

$2999

REMOVABLES

BERNOULLI



- ▶ SCSI Interface
- ▶ Removable Cartridges
- ▶ 18ms Acces time
- ▶ 150MB, 105MB, 65MB, 35MB Capacity

BERNOULLI MULTI-DISK™ 150

PC Version

- ▶ Ext. Multi-Disk 150™
- ▶ 150MB Cartridge
- ▶ Controller & S/w

$799

MAC Transportable

- ▶ Ext. Multi-Disk 150™
- ▶ 150MB Cartridge
- ▶ MAC Software

$799

90MB BERNOULLI REMOVALBE
PC VERSION ......$689 MAC Transportable ..$529

BERNOULLI CARTRIDGES	SINGLE	3-PACK
65MB	$79	$219
90MB	$159	$439
105MB	$109	$289
150MB	$159	$429

FLOPTICALS

IOMEGA®

21MB Floptical Drive

floptical®

MAC Version

INCLUDES:

- ▶ External 3.5" 21MB Floptical
- ▶ One Floptical Media
- ▶ Cables
- ▶ Software for MAC

$399

21MB MEDIA BY IOMEGA LASER ETCHED
SINGLE ......$19.99 5-PACK......$89.99

PC Version

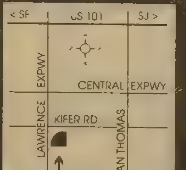
INCLUDES:

- ▶ IOMEGA 21MB 3.5" Floptical
- ▶ One Floptical Media
- ▶ Host adapter SCSI 8-bit
- ▶ Cables
- ▶ Software for PC

INTERNAL	EXTERNAL
$359	**$429**

21MB MEDIA BY IOMEGA LASER ETCHED
SINGLE ......$19.99 5-PACK......$89.99

YOUR HARD DRIVE & MULTIMEDIA SUPER SOURCE



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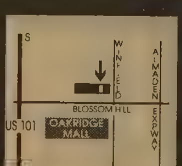

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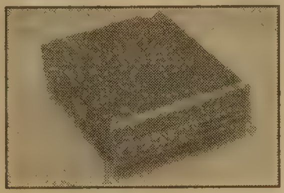
SyQuest TECHNOLOGY SUPER SOURCE

- ▶ Removable Drive Cartridge, 44MB or 88MB
- ▶ Unlimited Storage
- ▶ 20ms Access speed
- ▶ SCSI Embedded
- ▶ for MAC of IBM
- ▶ 2 Year Warranty

SyQuest TECHNOLOGY

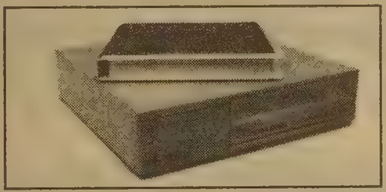
❑BARE DRIVES



44MB	SQ555	$279
88MB	SQ5110	$349
NEW!	SQ5110C	$419

READS & WRITES TO BOTH 44MB & 88MB CARTRIDGES

❑EXTERNAL DRIVES

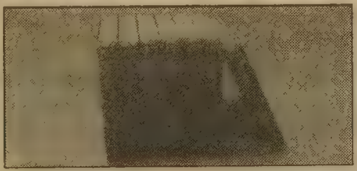


- ▶ EXTERNAL DRIVE
- ▶ CARTRIDGE
- ▶ STANDARD POWER CORD
- ▶ EXTERNAL CABLE
- ▶ INSTALLATION SOFTWARE (for Mac)

44MB	SQ555	$399
88MB	SQ5110	$499
NEW!	SQ5110C	$589

READS & WRITES TO BOTH 44MB & 88MB CARTRIDGES

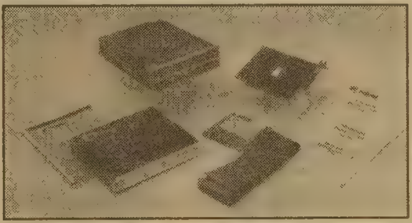
❑CARTRIDGES



CARTRIDGE	SINGLE	5-PACK
44MB	$67	$320
88MB	$99	$489

8-BIT CONTROLLER & SOFTWARE....$59

❑INTERNAL 8-BIT KITS

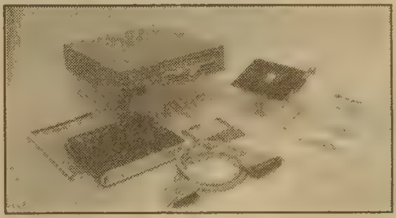


- ▶ INTERNAL SYQUEST DRIVE
- ▶ CARTRIDGE
- ▶ 8-BIT SCSI CONTROLLER
- ▶ CABLES
- ▶ INSTALLATION SOFTWARE

44MB	SQ555 Int. 8-BIT	$389
88MB	SQ5110 Int. 8-BIT	$489
NEW!	SQ5110C 8-BIT Int. 8-Bit	$559

READS & WRITES TO BOTH 44MB & 88MB CARTRIDGES

❑EXTERNAL 8-BIT KITS

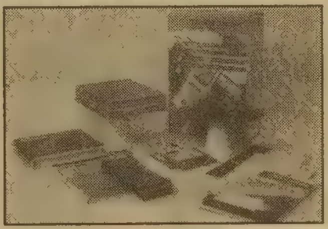


- ▶ EXTERNAL SYQUEST DRIVE
- ▶ CARTRIDGE
- ▶ 8-BIT SCSI CONTROLLER
- ▶ CABLES
- ▶ INSTALLATION SOFTWARE

44MB	SQ555 Ext. 8-BIT	$459
88MB	SQ5110 Ext. 8-BIT	$559
NEW!	SQ5110C Ext. 8-Bit	$639

READS & WRITES TO BOTH 44MB & 88MB CARTRIDGES

❑INTERNAL 16-BIT KITS

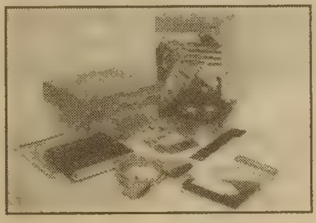


- ▶ INTERNAL SYQUEST DRIVE
- ▶ CARTRIDGE
- ▶ **adaptec** 1522 16-BIT SCSI CONTROLLER
- ▶ CABLES
- ▶ INSTALLATION SOFTWARE

44MB	SQ555 Int.16Bit	$489
88MB	SQ5110 Int.16Bit	$589
NEW!	SQ5110C Int.16Bit	$649

READS & WRITES TO BOTH 44MB & 88MB CARTRIDGES

❑EXTERNAL 16-BIT KITS



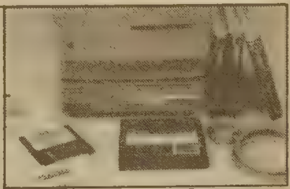
- ▶ EXTERNAL SYQUEST DRIVE
- ▶ CARTRIDGE
- ▶ **adaptec** 152216-BIT SCSI CONTROLLER
- ▶ CABLES
- ▶ INSTALLATION SOFTWARE

44MB	SQ555 Ext. 16-Bit	$559
88MB	SQ5110 Ext. 16-Bit	$659
NEW!	SQ5110C Ext.16-Bit	$739

READS & WRITES TO BOTH 44MB & 88MB CARTRIDGES

❑FOR ALL MACINTOSH MODELS*

Complete, Preformatted, Plug & Play External Kits.



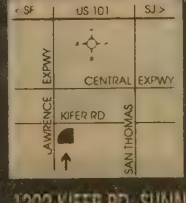
- ▶ EXTERNAL SYQUEST DRIVE
- ▶ CARTRIDGE
- ▶ CABLES (choice of 50C-Mac or 50C-50C)
- ▶ STANDARD POWER CORD
- ▶ FORMATTING SOFTWARE ($39 Value)

44MB	SQ555	$399
88MB	SQ5110	$499
NEW!	SQ5110C	$589

READS & WRITES TO BOTH 44MB & 88MB CARTRIDGES

*Macintosh Plus or above

Your Hard Drive & Multimedia Super Source



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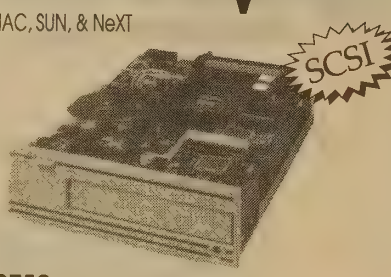
TAPE BACK-UP SUPER SOURCE

ARCHIVE

for IBM Compatibles, MAC, SUN, & NeXT

The BEST name in SCSI Back-up Drives



VIPER

2150
- ◆ 250MB VIPER
- ◆ 6MB/MIN.

INT.	EXT.
$459	$559

2525
- ◆ 525MB VIPER
- ◆ 6MB/MIN.

INT.	EXT.
$679	$779

ANACONDA 2750
- ◆ 1.6GB
- ◆ 36MB/MIN
- ◆ SCSI-2

INT.	EXT.
$899	$999

PYTHON

4324 TURBO PYTHON
- ◆ 4GB DAT 4mm
- ◆ 1MB Cache Buffer

INT.	EXT.
$1399	$1499

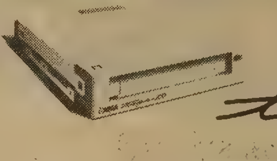
4320NT
- ◆ 2.0GB DAT 4mm
- ◆ 11MB/MIN.

INT.	EXT.
$1149	$1249

4542NT
- ◆ 4-8GB DAT 4mm
- ◆ 11MB/MIN.

INT.	EXT.
$1399	$1499

IOMEGA tape 250



RUNS OFF FLOPPY PORT
- ▶ 250MB Tape Back-up
- ▶ fits Standard 3.5" floppy bay
- ▶ Reads QIC Tape and Irwin tapes
- ▶ Central Point Software
- ▶ Windows Support

Tape 250 Insider	EXTERNAL W/CARD
$199	$319

EXTERNAL TAPE 250 PARALLEL PORT $429

IOMEGA 250MB Formatted tapes
Single .... $29 3Pack $79

EXABYTE®

SUN compatible 8mm SCSI back up system

SCSI-8mm

CAPACITY	MODEL	SIZE	INT.	EXT.
2.2GB	EXB-8200	FH	$1619	$1949
2.2GB	EXB8205	HH	$1849	$2049
5.0GB	EXB-8500	FH	$2649	$2899
5.0GB	EXB-8505	HH	$2799	$2999

HEWLETT PACKARD

Setting the Standards

SCSI 4mm DAT

CAPACITY	MODEL	INT.	EXT.
2.0GB	35470 DAT	$1149	$1249
4-8GB	35480 DAT	$1299	$1399

WangDAT™

SCSI QIC-Format

CAPACITY	MODEL/TYPE	INT.	EXT.
250MB	5150 1/4" SCSI	$469	$569
525MB	5525 1/4" SCSI	$679	$779

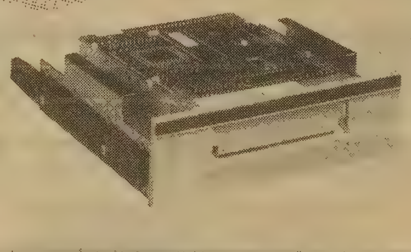
SCSI 4mm DAT

CAPACITY	MODEL/TYPE	INT.	EXT.
2.0GB	3100 DAT	$1149	$1249
4-8GB	3200 DAT	$1249	$1399

TAPE CARTRIDGES

CAPACITY	MODEL/TYPE	SINGLE	5-PACK
120MB	QD 2120	$18.95	$90.00
250MB	QD 6250	$28.95	$120.00
525MB	QD-6525	$33.95	$155.00
2.0GB	4mm DAT 90m	$19.95	$85.00
4.0GB	8mm EXABYTE	$17.95	$79.95

COLORADO MEMORY SYSTEMS INC.

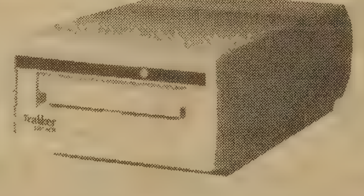


RUNS OFF FLOPPY PORT

CAPACITY	MODEL/TYPE	INT.
120MB	DJ10/IBM COMPATIBLE	$138
250MB	DJ20/IBM COMPATIBLE	$208

EXTERNAL KIT WITH CARD AND CABLES	$109
EXTERNAL TAPE PORT	$39
FC-10 TAPE CONTROLLER, WITH CABLES	$89
FC-15 HIGH PERFORMANCE 16-BIT CONTROLLER	$189

Trakker™



PARALLEL PRINTER PORT EXTERNAL TAPE BACK-UP SYSTEMS

RUNS OFF PARALLEL PRINTER PORT

CAPACITY	MODEL/TYPE	EXT.
120MB	TRAKKER 120	$359
250MB	TRAKKER 250	$409

IRWIN

An Archive® Company

RUNS OFF FLOPPY PORT

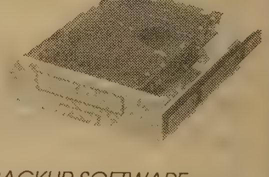
CAPACITY	MODEL/TYPE	INT.
120MB	ARC120	$149
250MB	ARC250	$199

PARALLEL PRINTER PORT *EXTERNAL* TAPE BACK-UP

RUNS OFF PARALLEL PRINTER PORT

CAPACITY	MODEL/TYPE	EXT.
120MB	AccuTRAK 120	$379
250MB	AccutRAK 250	$439

SUMMIT™ MEMORY SYSTEMS INC.



WITH CENTRAL POINT BACKUP SOFTWARE

RUNS OFF FLOPPY PORT

CAPACITY	MODEL/TYPE	INT.
250MB	SE-250	$209

BACKUP SOFTWARE

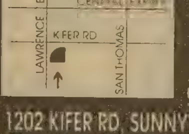
DESCRIPTION	PRICE
Sytos Plus™ for Adaptec	$99

NovaStor

BEST BACK UP SOFTWARE

DESCRIPTION	PRICE
NovaBack for DOS	$99
NovaBack for OS/2	$149
NovaNet-Server Based Software (up to 100 users)	$579

YOUR HARD DRIVE & MULTIMEDIA SUPER SOURCE



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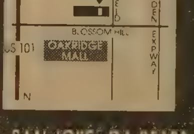

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MEMORY SUPER SOURCE

MEMORY SIMMS

IBM COMPATIBLE

256X9	80ns	3Chip	$12.99
1MBX9	80ns	3Chip	$29.99
1MBX9	80ns	9Chip	$32.99
1MBX9	70ns	3Chip	$31.99
1MBX9	70ns	9Chip	$34.99
1MBX9	60ns	3Chip	$34.99
1MBX9	60ns	9Chip	$37.99
4MBX9	80ns	9Chip	$Call
4MBX9	70ns	9Chip	$Call
4MBX9	60ns	9Chip	$Call
16MBX9	70ns	9Chip	$659.99

Macintosh

1MBX8	80ns	2Chip	$25.99
1MBX8	80ns	8Chip	$30.99
1MBX8	70ns	2Chip	$28.99
1MBX8	70ns	8Chip	$32.99
2MBX8	80ns	2Chip	$68.99
4MBX8	80ns	8Chip	$114.99
4MBX8	70ns	8Chip	$Call
4MBX8	60ns	8Chip	$Call
4MBX8	80ns	II-FX	$139.99
16MBX8	70ns	8Chip	$629.99

32-Bit for Quadra 800, Centris, & LCIII

2MB Module	$89
4MB Module	$159
8MB Module	$269
16MB Module	$629

MAC MEMORY INSTALLATION

2-Hr Installation **$15**

CACHE MEMORY

32X8-25	$6.50
32X8-20	$8.50
32X8-15	$17.00
32X8-12	$39.00
64X4-25	$8.50
64X4-20	$9.00
64X4-15	$18.00
64X1-20	$5.75
64X1-15	$6.75
8X8-25	$3.75
8X8-20	$3.25
8X8-15	$4.75
16X4-20	$6.25
16X4-25	$4.75
16X4-15	$8.25
128X8-25	$41.50
128X8-20	$CALL
128X8-15	$CALL

DIPPS

256X1 100ns	$2.09
256X1 80ns	$2.39
256X4 70ns	$5.45
64X4 100ns	$3.39
64X4 80ns	$3.79
1X4 80ns	$17.99
1MBX1 100ns	$3.75
1MBX1 80ns	$3.99
1MBX1 70ns	$4.29
1MBX1 60ns	$4.65

MEMORY SIPPS

1X9/70	$38.99
1X9/60	$44.99

72-PIN SIMMS

2MB 604-70ns	$89
4MB 1X36-70ns	$159
8MB 2X36-70ns	$269
16MB 4X36 70ns	$629

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486DX-33MHz	$329
486DX-50MHz	$449
486DX/2-50MHz	$459
486DX/2-66MHz	$549

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intel®

80287 ALL SPEEDS	$65
80387SX-ALL SPEEDS	$79
80387DX-16, 20,25,33	$79

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Co-processor for
386/ 16, 20, 25, & 33MHz

$65

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2C87-8, 10, 12	$59
2C87-20	$67
3C87SX-16, 20, 25	$69
3C87SX-33	$79
3C87-20, 25, 33	$79
3C87-40	$89

Cyrix™
ADVANCING THE STANDARDS

83S87SX-16, 20, 25	$69
83S87SX-33	$79
83D87-16, 20, 25, 33	$79
83D87-40	$89

WEITEK

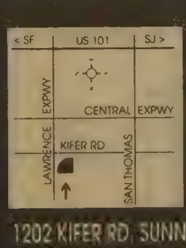
4167-25	$359
4167-33	$629

MOTHERBOARDS

High Quality, High performance

386SX-25MHz	$99
386SX-33MHz	$109
386DX-40MHz w/CPU, 64K Cache	$169
386DX-40MHz w/CPU, 128K Cache	$189
386DX-40MHz w/CPU, 256K Cache	$199
486DX-33 VESA Local Bus, 256K Cache	$459
486DX-50 VESA Local Bus, 256K Cache	$639
486DX2/66 VESA Local Bus, 256K Cache	$699

YOUR HARD DRIVE & MULTIMEDIA SUPER SOURCE



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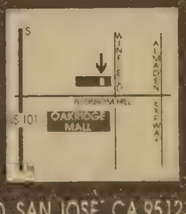

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FAX-MODEMS

BLOW OUT

US Robotics®

The Intelligent Choice in Data Communications

FIVE YEAR WARRANTY

SPORTSTER

MADE IN THE USA

14,400 FAX/MODEM V.32/V.42

INTERNAL	EXTERNAL
$195	$215

MAC EXTERNAL 14.4 .... $245

KEYBOARDS

KEYBOARDS

DESCRIPTION	PRICE
MITSUMI High Quality Keyboard	$29.99
MITSUMI BLACK	$49.99
MAX STANDARD 101 KEY	$19.99
ALPS SWITCH CLICK STYLE	$39.99

FOCUS

DESCRIPTION	PRICE
FOCUS 2000 W/COVER	$42.99
FOCUS 9000 with Calculator	$89.99

POINTING DEVICES

LOGITECH

HIGHEST QUALITY POINTING DEVICES

NAME	PRICE
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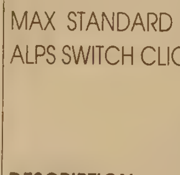

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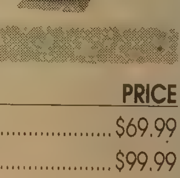

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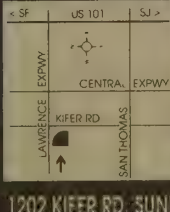

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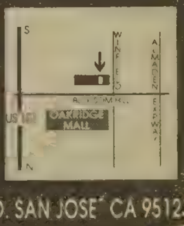

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- 2 Serial 1 Parallel 1 Game Port
- 101-key enhanced keyboard
- Mini-Tower Case w/ 200W Power supply
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- Windows Accelerator Card w/ 1MB
- 3-button Hi-Res Serial Mouse
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- 4MB RAM Expandable to 32MB
- 1.2MB and 1.44 Floppy Disk Drive
- 130MB IDE Hard Disk
- 1:1 Interleave 2 FL/2HD Disk Controller
- 2 Serial 1 Parallel 1 Game Port
- 101-key enhanced keyboard
- Mini-Tower Case w/ 200W Power supply
- 14" SVGA Non-Interlaced Monitor .28 dpi
- Windows Accelerator Card w/ 1MB
- 3-button Hi-Res Serial Mouse
- MS DOS 5.0, MS Windows 3.1

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- 64K Cache Expandable to 512KB
- 4MB RAM Expandable to 32MB
- 1.2MB and 1.44 Floppy Disk Drive
- 130MB IDE Hard Disk
- 1:1 Interleave 2 FL/2HD Disk Controller
- 2 Serial 1 Parallel 1 Game Port
- 101-key enhanced keyboard
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- 1:1 Interleave 2 FL/2HD Disk Controller
- 2 Serial 1 Parallel 1 Game Port
- 101-key enhanced keyboard
- Mini-Tower Case w/ 200W Power supply
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- 130MB IDE Hard Disk
- IDE 2H/2F Controller
- 2 Serial 1Parallel 1 Game Port
- 101-key enhanced keyboard
- Mid-tower case w/ 230W power supply
- 14" SVGA Non-interlaced monitor .28 dpi
- VL-B Graphic Accelerator w/1MB (Expandable to 2MB) Max 1280x1024 16.7 Million Colors. Driver Support Windows 3.1 AutoCAD R.12 OS/2 V.2.0
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- 130MB IDE Hard Disk
- IDE 2H/2F Controller
- 2 Serial 1Parallel 1 Game Port
- 101-key enhanced keyboard
- Mid-tower case w/ 230W power supply
- 14" SVGA Non-interlaced monitor .28 dpi
- VL-B Graphic Accelerator w/1MB (Expandable to 2MB) Max 1280x1024 16.7 Million Colors. Driver Support Windows 3.1 AutoCAD R.12 OS/2 V.2.0
- 3-button Mouse, MS DOS 5.0, MS Windows 3.1

Free Software Option

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- 128K Cache Expandable to512KB
- 4MB RAM Expandable to 32MB
- 1.2MB and 1.44MB Floppy Disk Drive
- 130MB IDE Hard Disk
- IDE 2H/2F Controller
- 2 Serial 1Parallel 1 Game Port
- 101-key enhanced keyboard
- Mid-tower case w/ 230W power supply
- 14" SVGA Non-interlaced monitor .28 dpi
- VL-B Graphic Accelerator w/1MB (Expandable to 2MB) Max 1280x1024 16.7 Million Colors. Driver Support Windows 3.1 AutoCAD R.12 OS/2 V.2.0
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1430S 14" 1024x768.25 NI	$590
1604S 17" 1024x768.25 NI	call
2036S 20" 1280x1024.30 NI	call
NEC	
3 FGX 15" 1024x768.28	call
4FG 15" Flat 1024x768.28 NI	call
5FG 17" Flat 1280x1024.28 NI	call
6FG 21"Flat 1280x1024.28	call

[illegible]

F550i 17" 1280x1024.28 NI	call
F660i 20" 1280x1024 .31 NI	call
F750i 21" 1280x1024.31 NI	call

[illegible]

(On - screen reprogramming)	
Programmable Keyboards	$109
Focus 9000 129 Keys Programmable	$70
Omni Ultra	$95
Omni 102	$69
Omni 101	$69
Keytronic 101	$39
OKI 101	$35
Maxi 101	$35

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CITIZEN	
GSX 140 24 pin	$269
Color option for GSX 140	$45
GSX 145 24 pin 132 column	$355
Color option for GSX 145	$65
HP	
HP Laserjet II-P plus	$770
HP Laserjet III-P	$965
HP Laserjet 500	$375
HP Laserjet 500C	$ 675
HP IV (HP4)	$1395
Toner for HP II	$79
Toner for HP II P+III P	$66
PANASONIC	
Panasonic 1123	$199
Panasonic 1124i	$285
Panasonic 1624	$349
Panasonic 2123	$239
Panasonic 2124	$319
Panasonic 2624	$375
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- CD Software: Carmen San Diego, Compton's Encyclopedia. Lotus 123, King's Quest, Macromind, Nautilus $895

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- Internal CD-ROM, Amplified Stereo Speakers Bundled Software $495

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CDR-84 INTERNAL	**$559**
CDR-74 EXTERNAL	**$595**
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NEC IBM DRIVER KIT WITH 8 BIT CARD	$85

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Sound Blaster 16-bit	$249

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- Controller Card $275
- 31A CD ROM
- Controller Card

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16 bit CD Controller Kit (Controller w/CD Driver S/W, by adaptec)	$159

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Beauty and the Beast
Bring the World to Your Senses
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CIA World FactBook
Chessmaster 3000
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Corporate Snapshots
Desert Storm
Dictionary of the Living World
DTP Pro
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Family Doctor
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Geovision
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Great Cities of the World Vol. 2
International Graphics Library
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Jets and Props
Jones in the Fast Lane
King Quest V
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MacroMind Action (no manual)
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RESOURCES

Calendar Of Events

CONFERENCES, SHOWS, AND OTHER SPECIAL EVENTS

APRIL

April 4 The Computer Show & Sale. Centennial Hall, Hayward. MarketPro. Call: (415)388-8893.

April 10 Computer Show & Sale. Cow Palace. Richard James. Call: 1-800-533-7220.

April 15 UNIX Software Success—Innovation In Progress Seminar. Santa Clara. SEF. Call: (415)854-7218.

April 17 Computer Show & Sale. Oakland Coliseum. Richard James. Call: 1-800-533-7220.

April 17 Macs Of Marin Entertainment Festival. San Rafael. Macs of Marin. Call: (415)485-5596.

April 17 The Computer Show & Sale. Solano Co. Fairgrounds. MarketPro. Call: (415)388-8893.

April 18 Computer Show & Sale. Alameda Co. Fairgrounds. Richard James. Call: 1-800-533-7220.

April 18 The Computer Show & Sale. Sonoma Co. Fairgrounds. MarketPro. Call: (415)388-8893.

April 18–20 EIS And Beyond Conference: How To Profit From Information Delivery. San Francisco. EIS Institute. Call: (617)964-4555.

April 20 ACT!, Contact Management Presentation. San Francisco. SFPCUG. Call: Susan Klum, (415)567-2280.

April 23 Apple Expo West. San Francisco. Event Specialists. Call: (617)784-4531.

April 24 Computer Show & Sale. Santa Clara Co. Fairgrounds. Richard James. Call: 1-800-533-7220.

April 25 The Computer Show & Sale. Scottish Rite Center, Sacramento. MarketPro. Call: (415)388-8893.

April 26–28 The Assessment, Measurement, And Evaluation Conference: Using Corporate Education To Create Competitive Advantage. Santa Clara. Linkage, Inc. Call: (617)862-4030

April 27–29 The Fifth Annual Monterey Software Conference. Monterey. DCI. Call: (508)470-3880.

MAY

May 1 Computer Show & Sale. Cow Palace. Richard James. Call: 1-800-533-7220.

May 2 The Computer Show & Sale. The Centre Concord. MarketPro. Call: (415)388-8893.

May 8 Computer Show & Sale. Oakland Coliseum. Richard James. Call: 1-800-533-7220.

May 8 The Computer Show & Sale. Marin Civic Center. MarketPro. Call: (415)388-8893.

May 11–13 Blyth Software User Conference. San Jose. Blyth Software. Call: 1-800-767-2336, priority code 04ZNXX.

May 15 Computer Show & Sale. Santa Clara Co. Fairgrounds. Richard James. Call: 1-800-533-7220.

May 15 The Computer Show & Sale. Solano Co. Fairgrounds. MarketPro. Call: (415)388-8893.

May 16 The Computer Show & Sale. Centennial Hall, Hayward. MarketPro. Call: (415)388-8893.

May 19–21 Meckler's 4th Annual Virtual Reality '93 Conference & Exhibition. San Jose. Meckler. Call: 1-800-635-5537.

May 22 Computer Show & Sale. San Mateo Expo Center. Richard James. Call: 1-800-533-7220.

May 22 The Computer Show & Sale. Sacramento. MarketPro. Call: (415)388-8893.

May 23 Computer Show & Sale. Alameda Co. Fairgrounds. Richard James. Call: 1-800-533-7220.

May 25–27 NeXTWORLD Expo '93. San Francisco. *NeXTWORLD* Magazine. Call: 1-800-767-2336.

May 25–27 Silicon Graphics Expo '93. San Jose. Silicon Graphics. Call: PCI Trade Show Management, (512)331-7761.

May 25–28 Sixth International Software Quality Week '93 Conference: Exploring New Technologies. San Francisco. Software Research Institute. Call: 1-800-942-SOFT.

May 29 The Computer Show & Sale. Sonoma Co. Fairgrounds, Santa Rosa. MarketPro. Call: (415)388-8893.

JUNE 6–11

COMPUTER INDUSTRY EXPORT OPPORTUNITY

The US Dept of Commerce is organizing a Computers, Peripherals, and Software "Matchmaker Trade Mission" to Sweden and the Netherlands. If you are planning to expand in Europe and would like to meet with prescreened distributors, have on-site interpreter service, and legal, financial, and industry specialists readily available, take advantage of this opportunity. The Foreign Commercial Service will conduct an extensive campaign to generate interest in your product and to arrange meetings with prospective distributors upon your arrival. Participation is limited. Contact: Norman de Carteret, (415)705-230 ext. 2284.

May 30 The Computer Show & Sale. Marin Civic Center. MarketPro. Call: (415)388-8893.

JUNE

June 20–26 The First Annual MultiMedia Publisher's Conference. Waikaloa, Hawaii. Unlearning Foundation. Call Mike Mathiesen, (408)423-8580.

CLASSES, SEMINARS, AND WORKSHOPS

APRIL

April 3–4 NetWare System Administration Course 1. Oakland. MIS Services. Call: 1-800-300-4MIS.

April 5 Intro To Lotus 1-2-3 Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

April 6 Intro To Word Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

April 7 Intro To Excel Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

April 7–June 23 Digital Integrated Circuits

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- SVGA Monitor and Card

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- SVGA Monitor and Card

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486DX2-66

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VESA Local Bus

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Impression 1024x768 .28dp	260
Impression 1024x768 .28, NI	295
Impression 7	850
Viewsonic 4E	300
Viewsonic 6E	339
Viewsonic 6FS	550
Viewsonic 7	999
NEC 3FGX	650
NEC 4FG	725
NEC 5FG	1375

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130 MB IDE	230
170 MB IDE	270
213 MB IDE	330
200 MB SCSI	CALL
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Trident 1 MB	60
Diamond Stealth VLB	180
Diamond 24X	180
ATI Graphics Ultra	280
ATI Graphics Ultra Pro, 2 MB	450
Orchid Fahrenheit VLB 1 MB (new item)	175

PRINTERS

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Panasonic 2123	245
Panasonic KX-P4410	645
Panasonic KX-P4430	895
HP Laser IIP+	785
HP Laser IIIP	999
HP Laser IV	1420

MISC.

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Fax/Modem (9600/2400)	70
Fax/Modem 14,400/14,400 Int/Ext (new Item)	190/210
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120 MB	185
250 MB	230
Colorado Tape Back-Up	
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250 MB	245
Archive Tape Back-Up 250 MB	195
Ethernet Card 16-Bit	99
Logitech Scanman 32 w/OCR Software	139/185
Logitech Scanman 256 w/OCR Software	249/299
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HKG Multimedia Package B
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- 3 Software Titles
- Mediavision 16-bit Sound Card

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- World Atlas v3.2 (Software Toolworks)
- Stellar Steven
- Sherlock Holmes
- Game Master
- LOOM
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- Chessmaster 3000 MPC
- King's Quest V
- Arcade Battles

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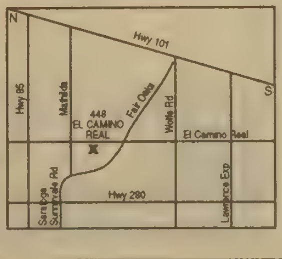

Corporate PO's Welcome

Prices Subject To Change W/O Notice

Calendar Of Events continued

Class. Santa Clara. UC Santa Cruz Extension. Call: (408)748-7375.

April 8 Intro To WordPerfect For Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

April 8 PageMaker I Course. San Francisco. Media Alliance/Computer Access. Call: (415)771-7133.

JUNE 14–17

THE FIRST ANNUAL MICROSYSTEMS FORUM 1993

Fairmont Hotel, San Jose

The First Annual MicroSystems Forum—Exploring the Key Issues Facing Computer Systems Designers is sponsored by *Microprocessor Report.* Some of the issues to be addressed include Windows NT Processors, Notebook Processors, PDAs, OS Wars, Which Bus, and the Audio Dilemma. The MicroSystems Forum seminars complement the conference by providing focused, in-depth tutorials on key topics. Contact: MicroSystems Forum, 874 Gavenstein Highway S., Suite 14, Sebastopol, CA 95472. 1-800-527-0288.

April 8–May 6 Selected Case Studies In Multimedia Design Class. San Francisco. SFSU Extended Education. Call: (415)338-1205.

April 10 Upgrading To NetWare 4.0 For 3.11 Professionals Course. Oakland. MIS Services. Call: 1-800-300-4MIS.

April 12 Intermediate FoxPro 2.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

April 12 Intro To DOS Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

April 12–June 28 C Language Programming Class. Santa Clara. UC Santa Cruz Extension. Call: (408)748-7375.

April 12–June 28 PenPoint Programming Class. Santa Clara. UC Santa Cruz Extension. Call: (408)748-7375.

April 12–May 13 Fundamentals Of Interface Design On The IBM PC Class. San Francisco. SFSU Extended Education. Call: (415)338-1205.

April 13 Beginning Paradox Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

April 13 Intro To WordPerfect Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

April 13–15 Client-Server Workshop. San Jose. DCI. Call: (508)470-3880.

April 13–16 Customizing AutoCAD Class. San Francisco. SFSU Extended Education. Call: (415)338-1205.

April 13–June 8 C Language Programming Class. Santa Clara. UC Santa Cruz Extension. Call: (408)748-7375.

April 14 WordPerfect Desktop Publishing Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

April 14–June 16 C++ Programming Language Class. Santa Clara. UC Santa Cruz Extension. Call: (408)748-7375.

April 15 Intro To Paradox Class. Walnut Creek. Computer Education Center. Call:

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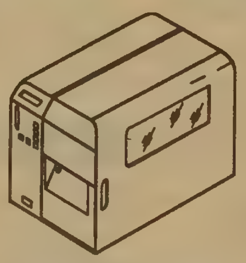

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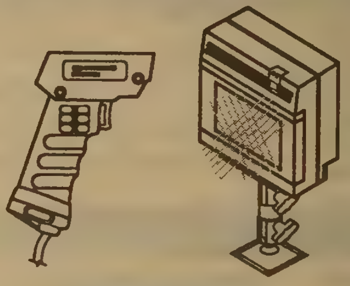

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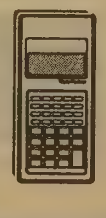

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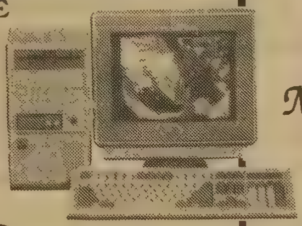

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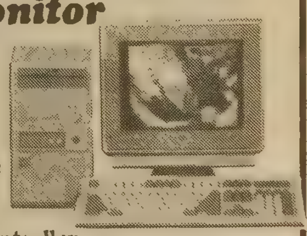

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PARADISE 1024X768/1M	$99
ACUMOS ACCELERATOR W/1M	$99
DIAMOND 24X	$179
DIAMOND STEALTH VESA LB	$185
ATI ULTRA PRO W/2M	$459
ATI VESA LOCAL BUS	$329
CALL FOR ITEMS NOT LISTED	

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486-33/50/66 DX	$470/639/759
486-33/50/66DX LOCAL BUS	$499/669/779
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386-25SX no cache	$105

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SVGA 1024x768 0.28DP	$285
SVGA 1024x768 0.28DPNI	$309
15" SAMSUNG SYNMASTER	$499
15" MAG15F 1280X1024 NI	$599
15" NEC3FGX 1024X768	$659
17" SAMSUNG 1280X1024	$899
17" NANAO 1280X1024 NI	$1,159
17" MAG 1280X1024 NI	$1,129
17" VIEWSONIC 1280X1024	$1,099

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Baby AT Case W/230W PS	$61
Middle Tower Case W/230W PS	$85
Big Tower Case W/230W PS	$105
Black Case W/PS	LOW

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101KB Keytronic	$49
Northgate Omni KB	$79
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1.44 Floppy Drive	$49
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Colorado Tape Backup 250 MB	$225
Heat Sink with Fan	$20

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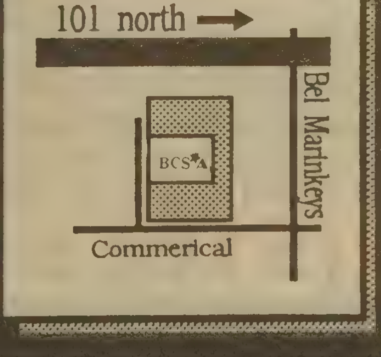

Calendar Of Events continued

(510)937-2566.

April 15 PageMaker II Course. San Francisco. Media Alliance/Computer Access. Call: (415)771-7133.

April 15–16 Windows Programming Using C++ Seminar. Santa Clara. Boston University. Call: (508)649-4200.

April 17 Ethernet Local Area Networks Class. Santa Clara. UC Santa Cruz Extension. Call: (408)748-7375.

April 17 Telecommunications Systems Selection Class. San Francisco. SFSU Extended Education. Call: (415)338-1205.

April 17–25 AutoCAD Overview Class. San Francisco. SFSU Extended Education. Call: (415)338-1205.

April 19 Intermediate Paradox Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

April 19–20 OS/2 2.0 Course. Oakland. MIS Services. Call: 1-800-300-4MIS.

April 19–23 Advanced UNIX For Programmers Course. Santa Clara. Bill Rieken. Call: (408)241-8319.

April 19–23 Softdesk AdCADD CIVIL Class. San Francisco. SFSU Extended Education. Call: (415)338-1205.

April 20–June 22 Intro To Data Communications Class. Santa Clara. UC Santa Cruz Extension. Call: (408)748-7375.

April 21 Intermediate Excel Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

April 21–23 IBM LAN Server 3.0 Course. Oakland. MIS Services. Call: 1-800-300-4MIS.

April 22 Adobe Illustrator I Course. San Francisco. Media Alliance/Computer Access. Call: (415)771-7133.

April 22 How To Build Your Own 486 PC Computer For Under $770 Class. Martinez. Martinez Adult School. Call: (510)228-3276.

April 22–May 20 Intermediate MacroMind Director Class. San Francisco. SFSU Extended Education. Call: (415)338-1205.

April 23 FreeHand I Course. San Francisco. Media Alliance/Computer Access. Call: (415)771-7133.

April 23 Intermediate Word For Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

April 23 Survey Of New Music And Audio Technologies Class. Santa Clara. UC Santa Cruz Extension. Call: (408)748-7375.

April 23–June 22 Multimedia Authoring Systems And Architecture Class. Santa Clara. UC Santa Cruz Extension. Call: (408)748-7375.

April 24 Intermediate Mac Course. San Francisco. Media Alliance/Computer Access. Call: (415)771-7133.

April 24–25 NetWare System Administration Course 1. Oakland. MIS Services. Call: 1-800-300-4MIS.

April 26 Intro To Word For DOS Class. San Francisco. SFSU Extended Education. Call: (415)338-1205.

April 27 Advanced FoxPro 2.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

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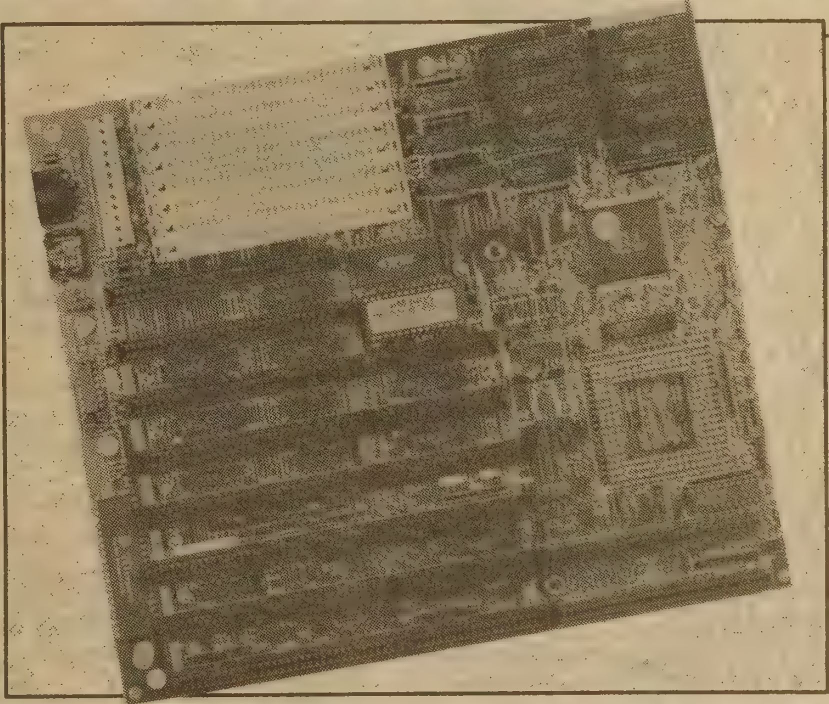

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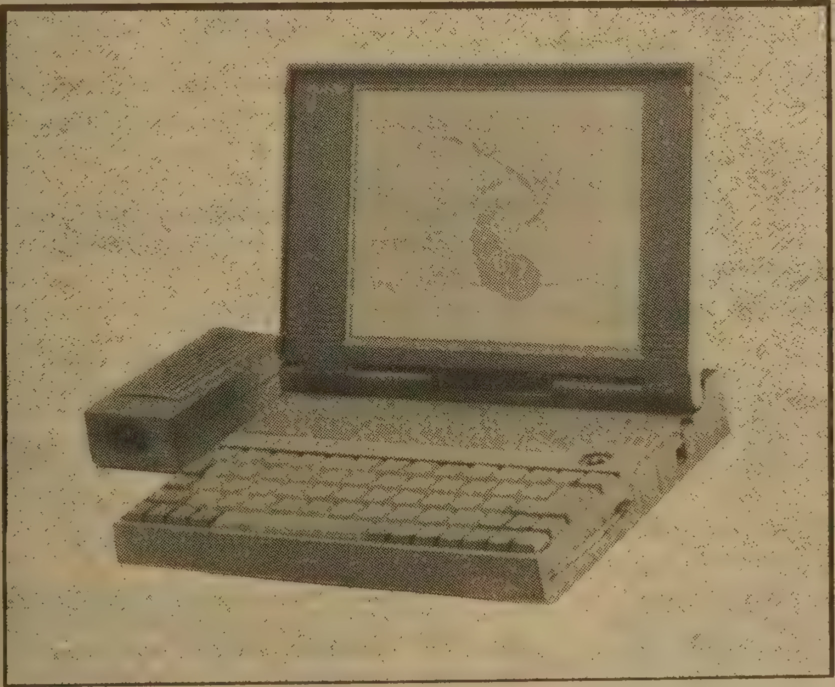

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Calendar Of Events continued

nut Creek. Computer Education Center. Call: (510)937-2566.

April 27 Intermediate Word For DOS Class. San Francisco. SFSU Extended Education. Call: (415)338-1205.

April 28 Intermediate WordPerfect For Windows Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

April 28 Intro To Excel Class. San Francisco. SFSU Extended Education. Call: (415)338-1205.

April 28–June 23 Advanced UNIX Software Development Tools Class. Santa Clara. UC Santa Cruz Extension. Call: (408)748-7375.

April 29 Adobe Illustrator II Course. San Francisco. Media Alliance/Computer Access. Call: (415)771-7133.

April 29 Advanced Paradox Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

April 29 Intermediate Excel Class. San Francisco. SFSU Extended Education. Call: (415)338-1205.

April 29 Intermediate Lotus 1-2-3 Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

April 30 Charting, Presentation Creation, And Macros With Excel Class. San Francisco. SFSU Extended Education. Call: (415)338-1205.

April 30 FreeHand II Course. San Francisco. Media Alliance/Computer Access. Call: (415)771-7133.

April 30 Intermediate WordPerfect Class. Walnut Creek. Computer Education Center. Call: (510)937-2566.

MAY

May 1 Modern Telecommunications In The Information Age Class. San Francisco. SFSU Extended Education. Call: (415)338-1205.

May 1–2 NetWare System Administration Course 2. Oakland. MIS Services. Call: 1-800-300-4MIS.

May 1 & 8 FrameMaker Course. San Francisco. Media Alliance/Computer Access. Call: (415)771-7133.

May 3 Beginning Excel 4.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

May 3 Intro To FoxPro 2.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

May 3 Intro To Windows Class. San Francisco. SFSU Extended Education. Call: (415)338-1205.

May 6 PageMaker 4.0 Intro Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

May 7 Beginning Paradox Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

May 11–13 Design For Multimedia And Computer/Human Interface Class. Santa Clara. UC Santa Cruz Extension. Call: (408)748-7375.

May 12 Intermediate FoxPro 2.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

May 12 &14 Novell System Supervisor 3.11 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

May 14 PageMaker I Course. San Francisco. Media Alliance/Computer Access. Call: (415)771-7133.

May 15 & 22 Photoshop Intensive Course. San Francisco. Media Alliance/Computer Access. Call: (415)771-7133.

May 16 MacroMind Director Course. San Francisco. Media Alliance/Computer Access. Call: (415)771-7133.

May 17 Beginning Quattro Pro For Windows Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

May 18–19 Internetworking With NetWare Seminar. San Jose. Center for Advanced Professional Development. Call: (714)261-0240.

May 19 Intermediate Paradox Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

May 20 FileMaker Pro I Course. San Francisco. Media Alliance/Computer Access. Call: (415)771-7133.

May 20 Intermediate Excel 4.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

May 20–21 Optimizing NetWare Seminar. San Jose. Center for Advanced Professional Development. Call: (714)261-0240.

May 21 PageMaker II Course. San Francisco. Media Alliance/Computer Access. Call: (415)771-7133.

May 25 Advanced Paradox Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

May 25 Intermediate Mac Course. San Francisco. Media Alliance/Computer Access. Call: (415)771-7133.

May 26 Advanced FoxPro 2.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

May 27 FileMaker Pro II Course. San Francisco. Media Alliance/Computer Access. Call: (415)771-7133.

May 27–June 17 FrameMaker Course. San Francisco. Media Alliance/Computer Access. Call: (415)771-7133.

JUNE

June 1 Intro To FoxPro 2.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

June 2 Beginning dBASE IV Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

June 3–4 Paradox PAL Language Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

June 5 Intermediate Mac Course. San Francisco. Media Alliance/Computer Access. Call: (415)771-7133.

June 7 Beginning Paradox Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

June 14 Intermediate FoxPro 2.0 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

June 14 Intermediate Quattro Pro For Windows Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

June 15 Intro To Windows 3.1 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

June 16 & 18 Novell System Supervisor 3.11 Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

June 22 Intermediate Paradox Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808.

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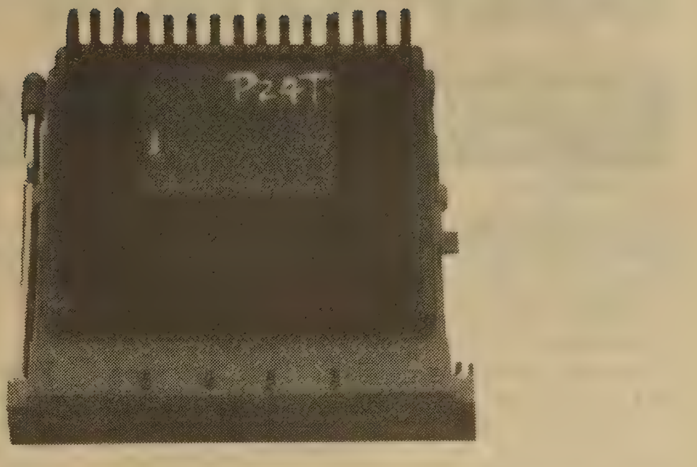
June 29 Advanced Paradox Class. Emeryville. Northwest Computer Systems. Call: (510)653-0808. ■

The 238 pins of ZIF socket mounted on the mainboard is considered to be able to extend the future upgradability of next generation OverDrive Processor from intel named P24T or so called P5.



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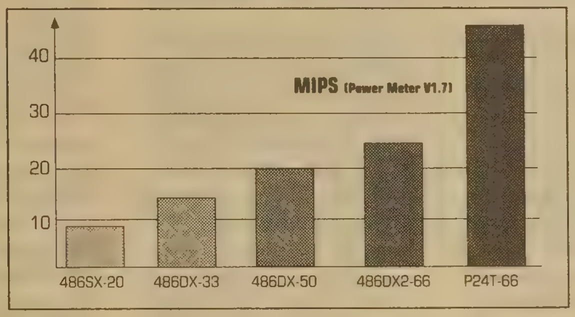

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INTEL 486DX2-66	*$1645*

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Orchid Fahrenheit 24VLB	$158
GENOA 8500 VLB	$115
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486DX-33-128K VLB	$420
486DX-50-128K VLB	$545
486DX2-66-128K VLB	$645
486DX-33-256K EISA	$620
486DX-50-256K EISA	$729
486DX2-66-256K EISA	$860
UltraStor 24F EISA SCSI	$390

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Panasonic 1123	$203
Panasonic1124i	$288
Panasonic1624	$343
Panasonic 4410	$624
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HoloNet Internet Access BBS. (510)704-1058; call for other nationwide numbers. 8-N-1, 24 hrs., 1200/2400/9600/14,400. Internet: telnet, FTP, IRC, MUDs. 3500+ Usenet groups. Free demo. [Exp. #108.]

Interactions BBS. (408)258-8913, (415)469-5510, (510)832-0560, with numbers from Richmond to Fremont. 12-lines, friendly chat (over 18 only), two-week free trial. Sysop: C. Watson. [Exp. #107.]

Lambda. (415)572-2591, 755-9439, (510)268-9891. Adult, mostly gay/lesbian, all are welcome. Email, chat, matching. Free. [Exp. #109.]

Portal Communications. (408)725-0561, (300–2400); (408)973-8091, (9600–57,600); (415)965-8059, (300–57,600). Worldwide X.25 online, shell, BBS & UUCP connections. Voice: (408)973-9111. [Exp. #109.]

Pro-Line BBS. (408)226-3880, (415)390-0763, (510)790-2923. 24 hrs. Chat, matchmaking, 1GB storage, database lifestyles, jobs online, email, and more. [Exp. #108.]

Public Domain Software Exchange. (415)571-6911, (707)444-9203. 8-N-1, 24 hrs., 1200/2400. Multiple message areas, large file library, chat, two lines. [Exp. #107.]

SF Net. (415)824-8747, 589-2194, 332-3923, (510)450-0155, 638-8644. Coffee House/Cafe Connection, 32 lines, public terminals, chat, matchmaker, msg areas, Fido 1:125/824, Internet mail. Voice: (415)695-9824. [Exp. #109.]

209

BerthaBoard. (209)823-0093. 1200–14,400. Two lines, 5.2GB, 70,000 files, lrg. msg. base. [Exp. #108.]

The Haunted Castle BBS. (209)826-1900. 2400/9600. Two nodes, 650MB online, GIFs, sound, Windows, games. [Exp. #109.]

408

A32 Macintosh User Group BBS. (408)263-0299. 24 hrs., 2400. Second sight, members only. Voice: (408)263-0398. [Exp. #108.]

Amateur Action BBS. (408)263-3393. 8-N-1, 1200/2400/9600. 100% Adult Amateur GIF files, eight lines. [Exp. #107.]

Apple Byte GS. (408)578-3201. 1200/2400/9600. Apple II Support, member FVNet, running Metal/FutureVision, 685MB. Sysop: Jim Buchanan. [Exp. #108.]

Atlantis BBS. (408)377-8510. 8-N-1, 24 hrs., 2400. Major BBS, multiplayer games and door games. Free limited demo accounts. Subscription: 25¢ hr. [Exp. #107.]

BayNar-Net. (408)926-8547. 24 hrs., 2400. Model rocketry, IBM programs, NAR affiliated, family oriented, NAR affiliated. Sysop: Phil Hayton. [Exp. #108.]

BayVAC DEC LUG BBS. (408)776-4823. 9600. Log in as username GUEST, password GUEST for BBS information. Voice: (408)776-4978. Sysop: Rich Taylor. [Exp. #109.]

The Beggar's Tomb. (408)243-TOMB. GIFs, stories, and animation for adult orientations. Sysop: The Grim Reaper. [Exp. #107.]

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Careers Online. (408)248-7029. 1200/2400/9600/14,400. Online job and contract listing, resume fax service. Free to all. [Exp. #109.]

Casa Del Cyborg. (408)457-2595. Mac programming, VR, sci-fi, politics, NASA, smart drugs, OneNet msg bases. Sysop: Curt and Emil. [Exp. #108.]

CBORN. (408)262-7876. 8-N-1, 1200/2400. Classified business opportunity research net. Sysop: Leo Bert. [Exp. #109.]

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DC-To-Light. (408)262-5150. 8-N-1, 24 hrs., 300/1200/2400/9600. MS-DOS, CAD, UNIX, WIN, LAN & HAM: Conferences and email. Sysop: Fred Townsend. [Exp. #107.]

The Electric Pages. (408)253-4280. 300/1200/2400. Commercial and private advertising. Select by category or key words. Voice: (408)253-1709. Sysop: Contemporary Communications, Inc. [Exp. #107.]

Escape To Other Worlds BBS. (408)956-1750. 8-N-1, 1200/2400/9600/14,400. SF/fantasy, comics, games, msgs., three lines, D/L files. Mac and PC GIFs, 1.8GB. [Exp. #109.]

The FoxTail Inn. (408)778-5688. Dedicated to the Equestrian community. Fidonet/RBBSnet/Internet. Morgan Hill. [Exp. #108.]

Hard Core BBS. (408)246-3811. 24 hrs., 1200/2400/9600. Music-oriented board, w/ gaming files, online games, great msgs. Free trial. Sysop: Merlin. [Exp. #108.]

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The Holodeck BBS. (408)248-0869. 1200/2400/9600/14,400. Online games, Fidonet, IBM files, and GIFs. Home of W&W Communication Doorware. [Exp. #109.]

Infoserve Connections. (408)243-2102. 8-N-1, 24 hrs., 2400. UUCP/Usenet/email for DOS, Mac, and 386/UNIX. Sysop: B. Oesterreich. [Exp. #107.]

International TeleText Communications, Inc., (ITC). (408)735-1803. 24 hrs. Learn about new TV Data Trasmission Technology on TV36. Complete stock market dtat and more. [Exp. #109.]

The Land Of Garg BBS. (408)378-5108. 8-N-1, 24 hrs., 1200/2400/9600/14,400. Local msg posting on first call, validation req for USENET posting, file access, Internet mail. Sysop: Bob Van Cleef. [Exp. #108.]

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You And The Internet

The presidential campaigns used it for publishing position papers. The White House is now disseminating information through it. Probably someone you know gets email addressed there. If you don't have an Internet account, you probably want one. The popularity of the Internet among personal computer users could be the online story of the year.

Eric Theise, who previously taught networking courses at the Naval Postgraduate School in Monterey, was surprised to see standing-room only for his class "Navigating the Internet: A Crash Course" in February at Modern Times Bookstore in San Francisco. It was an opportunity for those who own a computer and modem to see a demonstration of the "world net," a variety of Internet services, ranging from electronic mail and file transfer to information search and retrieval, real-time conferencing, and text-based virtual worlds.

People tend to be so imprecise with their use of Internet jargon that it's difficult to get a grasp of what's really going on without seeing the options demonstrated, or signing up for a public access account and just jumping into the fray. For example, it's anticipated that some time in 1993, Prodigy users will be reachable via Internet email, but so many people have believed that means that Prodigy will be "on the Internet" that INTERNET has become a permanent Prodigy topic. There are several layers of service, email being one of them, and email is the only one that Prodigy will offer.

Eric Theise continues his series of network offerings—the next one, "Writing Down the Nets: Creative Lit in Cyberspace" is Wednesday, April 21, 7:30 p.m., with admission $3–$5 sliding scale. Future topics include "Innkeeping in Cyberspace," "Cyberarts," and "Telecom with a Cause." These seminars will continue through August.

Modern Times Bookstore
888 Valencia (between 19th and 20th Streets)
San Francisco, CA 94110
(415)282-9246

The Whole Internet User's Guide & Catalog

There are now a few books dedicated to explaining the Internet to the novice user. Theise recommends *The Whole Internet User's Guide & Catalog* by Ed Krol (O'Reilly & Associates, Inc., Sebastopol, CA, 1992, ISBN: 1-56592-025-2). Krol, author of "Hitchhiker's Guide to the Internet," a short tutorial still found online, has written a clear and novice-friendly book.

It does not assume a knowledge of UNIX, but tiptoes through the UNIX landmines by stressing rote commands for those of us who are UNIX-impaired. (Krol points out that not all Internet sites are UNIX-based, but most are, so he uses UNIX as the default operating system.)

Part of the book is a catalog demonstrating the wide variety of information available via the Internet, from archive sites to individual newsgroups (Usenet). The catalog isn't meant to be exhaustive, but the combination of instruction on using Internet tools with the sampling of offerings is a complete package for the new user.

Continued

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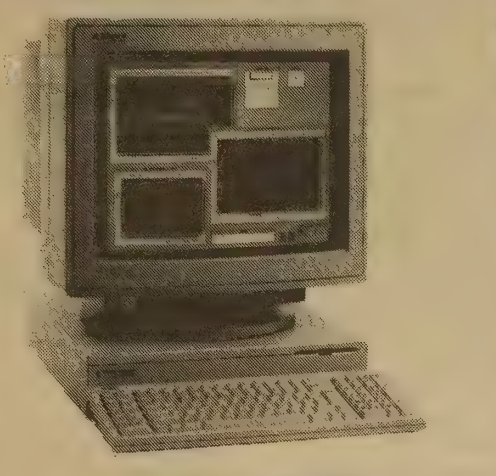

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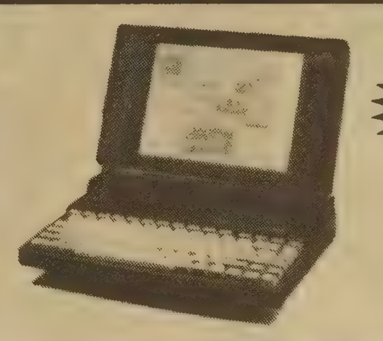

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Monterey Gaming System. (408)655-5555. 300/1200/2400/9600/14,400. 16 lines, conferences, msgs., custom games. Free. [Exp. #109.]

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NightLog BBS. (408)655-1096, 655-8294. 24 hrs., 300–16,800. DOS, Windows, OS/2, adult files, 17 lines, 4.9GB. Sysop: Karl Van Lear. [Exp. #108.]

Night Watch BBS. (408)249-0805. 14,400. IBM. Free Access. Sysop: Carl Bacani. [Exp. #107.]

Pacific Exchange BBS. (408)946-8561. 12 lines, 50,000 IBM/Windows files, adult files, online news, games, and more. [Exp. #109.]

The Phoenix Islands. (408)270-4077, 270-4078. 24 hrs., 1200/2400/9600/14,400. Windows, IBM files, GIFs, adult files. Free. Sysop: Phan Tram. [Exp. #109.]

Positive Image Studio. (408)270-8996, 270-8916. 8-N-1, 24 hrs., 14,400. Mac and IBM graphics, animations, sounds, utils, adult material, 4GB. Memberships avail. [Exp. #108.]

Ring Of Fire BBS. (408)739-8753. BBS for United Sysop's Association and Silicon Valley Novell Users Group. Since 1982. Hum for USAnet. Sysop: Bill Strouse. [Exp. #108.]

The Rising Storm. (408)739-8693. 8-N-1, 14,400. Emergency prep., firearms, politics, and more. Survival echos and files. Sysop: Kirk DeHaan. [Exp. #107.]

The Roadkill Grill. (408)985-0213. 1200/2400. Fidonet/OtherNets. Two nodes, lots of loony people. Free access. Sysop: Bryce Wolfson. [Exp. #109.]

San Jose Connection. (408)956-8819. 8-N-1, 24 hrs., 300/1200/2400/9600. Fidonet 1:143/111. Many msg areas, files, job listings, all orientations, adult, and teens. Free. [Exp. #108.]

Second Generation BBS. (408)980-8830. Technical support and chat by New Dimensions. Sysop: Lou. [Exp. #107.]

The Shrine BBS. (408)747-0778. Magick, religions, and sex. Adult and women only areas by request. Free system. Sysops: Junell Zzz and Tom Zoch. [Exp. #108.]

The Shuttle BBS. (408)998-2659. 24 hrs., 1200/2400/9600/14,400. Full multimedia support BBS. Mouse, VGA, and sound support. Sysop: Michael Vedda. [Exp. #108.]

The Silicon Connection. (408)492-9700. 24 hrs., 300/1200/2400. Electronic PenPal Network, 16 lines. [Exp. #107.]

Silicon Valley BBS. (408)946-3792. 8-N-1, 24 hrs., 1200/2400/9600/14,400. Mac, IBM, OS/2, graphics, games, utils, G–XXX, adult conferences. Sysop: Alan Ginsburg. [Exp. #109.]

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The Support Network BBS. (408)259-0297. 10:00 am–11:00 pm daily, 8-N-1, 1200/2400/9600. Community computing for Santa Clara County. Sysop: Frank Arnold. [Exp. #109.]

Sure 2B Famous. (408)866-2659. 8-N-1, 2400. TreNET/VirtualNET, Real Estate photos and listings, professional directory. Sysop: Guy W. Tessum. [Exp. #107.]

The Tech BBS. (408)279-7199. 8-N-1, 5:30 pm–9:30 am, PST. 300–19,200. BBS run by staff and volunteers of The Tech Museum of Innovation. [Exp. #108.]

Texas Instruments PCs. (408)296-2503. 24 hrs., 2400. Message base, user group info & software for TIPC. Sysop: Mark Cantrell. [Exp. #107.]

Thunder Mountain BBS. (408)266-4553. 8-N-1, 2400. Four lines, chat, files for all, email, matchmaker—all free. Sysop: SysFlyer. [Exp. #108.]

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ALIEN BBS. (415)359-8774. 8-N-1, 24 hrs., 1200–14,400. Amiga/IBM/Mac info. Adult boards w/registration. Free. Sysop: Ed Vandehey. [Exp. #107.]

Amiga Station San Francisco. (415)824-8774. 24 hrs., 300/1200/2400. TBBS supporting the Commodore Amiga. Free registration. Sysop: Richard Gaikowski. [Exp. #109.]

Back Door For Bi/Straight Men & Women. (415)756-8452. 8-N-1, 24 hrs. 10 lines, 18 and over only. [Exp. #107.]

Back Door For Gay/Bi Men. (415)756-6238. 8-N-1, 24 hrs. 33 lines, alt lifestyles, 18 and over only. [Exp. #107.]

Back Door For Lesbian/Bi Women. (415)756-8426. 8-N-1, 24 hrs. 10 lines, alt lifestyles, 18 and over only. [Exp. #107.]

BAHUG BBS. (415)326-4486. 8-N-1, 24 hrs., 300/1200/2400. DTP info and help for Heath/Zenith machines. Free. Co-Sysops: Freeman Bradford and Ed Hayes. [Exp. #107.]

Bay Area Luv Connection. (415)822-7550. 24 hrs. Adult board, 16 lines. Fee. Voice: (415)239-1028. Sysop: Ronnie Parker. [Exp. #109.]

Bay Link BBS. (415)931-0583. 8-line chatlinked occasionally to other cities, games, dating. Sysop: Brian Martin. [Exp. #109.]

Bay Windows BBS. (415)755-2939. 10–11 pm, 2400. DOS, utils, email. No reg fee, no ratios. Sysop: Judy. [Exp. #107.]

The Board With No Name North. (415)558-8866. 8-N-1, 24 hrs., 300/1200/2400. Gay & Lesbian community, chat, ONMIChat, email, library w/ GIF's & Fantasy text. [Exp. #107.]

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Netcom

Some people believe that only universities and computer companies are "on the net." Bay Area folks interested in the Internet have several public access sites from which to choose, Netcom being the most accessible through most of the Bay Area because of its flat-rate monthly charge ($17.50/month) and local access phone numbers to various communities. Since Netcom was reviewed in this column last year, it has added points of presence (POPs) in the Bay Area and throughout California, as well as in Portland. It will also soon expand to Seattle and Texas.

This is the list of Netcom phone numbers, listed by the regions for which they are a local call:

San Francisco (all), Sausalito, San Mateo, Daly City, Brisbane, South San Francisco, San Bruno, Milbrae, Pacifica, Burlingame, Hillsborough, Foster City, San Carlos (415)985-5650
Sacramento, Fair Oaks, Folsom, Carmichael, Rancho Cordova, Rio Linda, Citrus Heights, and Arden Arcade (916)965-1371
Los Angeles, Inglewood, Beverly Hills, El Segundo, Santa Monica, Manhattan Beach, Van Nuys, and Culver City (310)842-8835
San Diego, El Cajon, La Jolla, La Mesa, Linda Vista, and Mira Mesa (619)234-0524
Santa Cruz, Scotts Valley (408)459-9851
Berkeley, Oakland, Albany, Richmond, Alameda, Piedmont, Belvedere, Orinda, Moraga, San Pablo, Lafayette, Emeryville, and Brisbane (510)865-9004
San Jose, Campbell, Almaden, Cupertino, Los Gatos, Saratoga, Sunnyvale, Santa Clara, and Milpitas (408)241-9760
Stanford, Mountain View, Los Altos, Menlo Park, Palo Alto, and Redwood City (415)328-9940
Pleasanton, Fremont, Hayward, Livermore, Bishop, San Ramon, Dublin, Newark, Danville, Sunol, and Bishop Ranch (510)426-6860
Portland, OR (503)626-6833

For information regarding Seattle, Dallas, Houston, and Austin, call Netcom directly.

For account information:

Netcom Online Communications Services
4000 Moorpark Ave., Ste. 209, San Jose, CA 95117
(408)554-UNIX

CR Labs

Except for its Sausalito POP, Netcom neglects Marin and Sonoma County users. CR Labs has stepped into the breach, offering individual public access Internet accounts for $17.50/month, and customer support services into Marin and Sonoma Counties. (The northernmost POP is a local call to Santa Rosa, Petaluma, and the town of Sonoma. North and west of Santa Rosa is a toll call.)

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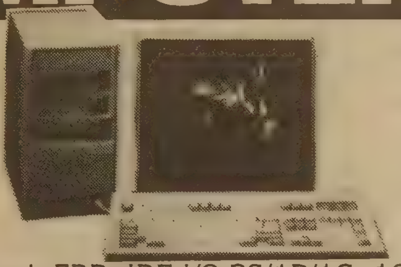

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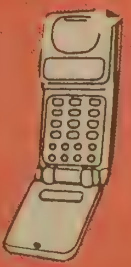

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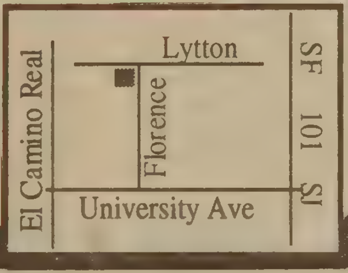

BBSes

ComPUCall. (415)703-1297. 7-E-1, 1200/2400. California's Public Utilities Commission's calendars, decisions, releases. [Exp. #107.]

Computer Show Hotline. (415)340-9370. 8-N-1, 1200/2400. Latest Computer Show info. Complete list of dates, times, locations, and directions. [Exp. #108.]

Corner UNIX. (415)564-8750, 564-4345. 8-N-1, 1200/2400/9600/14,400. San Francisco Public Access UNIX. Sysop: Furryeel. [Exp. #108.]

Covert Operations. (415)897-1880. 24 hrs., 9600. Wildcat 3.60, growing Marin BBS, WildNet, GIFs/JPGs. Sysop: Matthew Taylor. [Exp. #109.]

DataFax BBS. (415)390-9577. 8-N-1, 24 hrs., 1200/2400/9600. Tech support for Calculus EZ-Tax and Sizcomp modems. Free access. Sysop: Tod Wooton. [Exp. #107.]

David's Basement. (415)332-3943. Fidonet, TCalNet, DoorNet msgs. 170+MB, 45+ online games. Sysop: David. [Exp. #109.]

DPNet BBS. (415)788-8663. 8-N-1, 24 hrs., 300/1200/2400/9600. Free consultant job listings, Fidonet conferences, professional computing organizations, and technical SIGs. All welcome. [Exp. #107.]

The Elfspire Tome BBS. (415)595-2387. 1200/2400/9600. A fantasy role-playing G.M. resource bulletin board featuring role-playing, games, fantasy clipart, and more. [Exp. #107.]

Eye Contact BBS. (415)703-8200. 300/1200/2400/9600. Gay Men's issues, 354 lines, chat, matchmaker, over 20,000 files. Verification, 18 and over. Local access number nationwide. Sysop: Bill Montgomery. [Exp. #108.]

Fog City. (415)863-9697. 8-N-1. Gay & Lesbian community, chat, matchmaking, CD-ROMs, games, 2.4GB. Since 1986. [Exp. #107.]

Gateway Software BBS. (415)885-1392. 24 hrs., 1200/2400/9600/14,400. ASP shareware author, support BBS. Free access. Sysop: Philippe Rabergeau. [Exp. #108.]

Golden Gate Computer Society BBS. (415)927-1216. 24 hrs., 2400–14,400. 4 lines, toll free for SF, East Bay. Member of ILink & Baylink message networks. [Exp. #107.]

Griffin DataFast. (415)327-5156. 8-N-1, 24 hrs., 1200/2400/9600/14,400. OS/2, DOS & Windows files, messages. OS/2 FAQ Hardware at wholesale. Sysop: Scott Williams. [Exp. #107.]

Guideboard. (415)864-3858. 24 hrs., 300/1200/2400. Multiline, Cabbie's Guide to SF restaurants, doctors, auto repair, etc. Sysop: Dick Schwartz. [Exp. #109.]

The Halibut BBS. (415)961-9635. A BBS for CAL Band Members. Band history files, serving your RIME needs. Free. Sysop: Marge Smith. [Exp. #109.]

Hispanic On-Line Access—HOLA. (415)252-0285. 8-N-1, 8:00 am–9:00 pm, 300/1200/2400. Hispanic issues, software, business, Latin America news. Free. [Exp. #108.]

IBBS West. (415)564-9996. 8-N-1, 24 hrs., 300/1200/2400/9600/14,400. PC and compatibles, utils., adult GIFs, CD-ROM w/10,000 files, free trial. [Exp. #108.]

Incipits Remote BBS. (415)359-2067, 359-2068. 1200–38,400. Tons of DOS, OS/2, and UNIX shareware. Distribution point for 386BSD PD UNIX and X11. [Exp. #108.]

InfoDude Communications. (415)855-9500. 24 hrs., 2400/6900/14,400. Teleconferencing, Forums. IBM, Windows, Mac; and Amiga files. Instant reg., first 100 hrs free, $2/mo. Sysop: Joseph A. Jenkins. [Exp. #109.]

IN-Formation EXchange BBS. (415)282-3823. RaVeNET Host system. GaSpNET programmer's hangout: C++, C, and Pascal w/megs of source code. Sysop: Robert Escamilla. [Exp. #109.]

The Informer BBS. (415)468-6713, 468-9913. 24 hrs., 2400–14,440. TCalNet, Intelec, FamNet, WindNet, Newlife, Operating Systems, Tech Specs, conferences. Subscription/free. Sysop: John Custer. [Exp. #109.]

Lies Unlimited. (415)583-4102. 2400. Politics and polemics. NIRVANAnet. Instant access, no fee. [Exp. #107.]

The MIDI & Multimedia Exchange BBS. (415)771-1788. 8-N-1. .MID/.MOD, .AVI, .FLI Libraries. Free access. [Exp. #107.]

The New Dork Sublime BBS. (415)864-DORK. Subliminal news for new dorks everywhere. NIRVANAnet node 9:900/10. Sysop: Demented Pimiento. [Exp. #107.]

Play-Mates. (415)969-1056. 8-N-1, 24 hrs., 1200. Mountain View BBS for adults w/ alternative lifestyles. Gay & Bi. Sysop: Vic Ruder. [Exp. #109.]

The Play-Pen BBS. (415)897-3073. 8-N-1, 24 hrs., 1200–19,200. Chess, U'NI-net, MarkMail. Free. Sysop: Paul Ward. [Exp. #109.]

Prime Meridian BBS. (415)587-3995. 8-N-1, 24 hrs., 2400–57,600. MODs, utils, 500+MB, good access. Sysop: Ed Ng. [Exp. #109.]

Recovery BBS. (415)255-2188. 8-N-1, 300/1200/2400. AA, NA, Al-Anon/ACA, SLAA. Recovery and 12 Step Echos. Fido 125/9. Sysop: Rich Gorlin. [Exp. #107.]

The Rocking Chair Connection BBS. (415)364-7884. 24 hrs. Two nodes, files, net mail, 640MB online. Sysop: Frank Crispell. [Exp. #108.]

Salt And Light. (415)368-0790. 8-N-1, 1200/2400. IBM, Biblical understanding—files and question area. Sysop: Peninsula Christian Center. [Exp. #107.]

San Francisco PC Users Group BBS. (415)621-2609. 8-N-1, 24 hrs., 1200/2400/9600/14,400. Sysop: Richard Couture. [Exp. #109.]

San Francisco Robotics Society Of America BBS. (415)648-6427. 8-N-1. Software and msgs for robot building enthusiasts. Sysop: Brad Smallridge. [Exp. #108.]

SearchNet International BBS. (415)873-5336. Gov't files, FCC watchdog, free speech, politics, nonprofit group material accepted. Voice: (408)236-3706. Sysop: James P. Leonard. [Exp. #107.]

Skeptic's Board. (415)572-0359. Science and fringe science. Internet/Usenet access. San Mateo. Sysop: Rick Moen. [Exp. #107.]

SMUG (Stanford-Palo Alto Mac User Group) BBS. (415)856-0210. BBS on Threshold 2000, uses Telefinder GUI. [Exp. #108.]

The Software Exchange! (415)992-2860. 8-N-1, 1200/2400/9600/14,400. Wildcat 3.60S, files, msgs, and doors. Six month trial, $5.00 lowest. Sysop: Chris Jong. [Exp. #109.]

Space BBS. (415)323-4193. 10 lines, *Boardwatch* Top 10 BBS, 50,000 files, UPI News, etc. ASP Hub BBS site. Sysop: Owen Hawkins. [Exp. #107.]

Swizzle Stick—Macintosh. (415)589-4404. 1200/2400/9600/14,400. 2 lines, Kate Bush & foreign travel, 100 msg areas 600MB Mac files. Fidonet 1:125/110. [Exp. #107.]

Symmetrics BBS. (415)382-6679. 8-N-1, 24 hrs., 1200/2400. Membership, $10/yr. Online games, lots of shareware programs. [Exp. #108.]

The System. (415)369-5144. 8-N-1, 24 hrs., 300/1200/2400/9600. Accounting, AccPac, BPI, Simply, Telemagic, Novell networks, email. [Exp. #107.]

Tomorrow's Order Of Magnitude. (415)961-9315. 2400. Serving inmates, patients, and reg'd voters in the South Bay. Sysop: finger-man. [Exp. #107.]

Uncle D's Directory. (415)364-3001. 8-N-1, 24 hrs., 1200/2400/9600/38,400. Software for deaf & education, msgs, file search, classified ads, offline mail, doorways. No fees. [Exp. #108.]

VA Listings. (415)744-7793. 24 hrs., 300/1200/2400. VA-owned homes for sale. Multiline. Sysop: David Piersall. [Exp. #108.]

Wetware Diversions Public UNIX. (415)826-0397. 8-N-1, 24 hrs., 1200/2400. Full Usenet news, eight lines. Sysop: Eric Swason (editor@wet.UUCP). [Exp. #107.]

Window World BBS. (415)931-0649. 24 hrs. For people who use Windows-type software. Info., shareware, chat. Sysop: Bob Cram. [Exp. #109.]

510

& Planet Mirth. (510)786-6560. 8-N-1, 24 hrs., 1200/2400/9600/14,400. Local msgs, Fidonet (1:215/130), AdultLinks, files, doors. Sysop: Comet & Bunny. [Exp. #109.]

& The Temple Of The Screaming Electron. (510)935-5845. 38,400. A safe haven for visionaries and paranoids, 100MB, NIRVANAnet. No fee. Sysop: Jeff Hunter. [Exp. #107.]

8-Bit Apple User Group BBS. (510)294-8052. 24 hrs., 300/1200/2400. Apple II ProDOS, DOS 3.3, UL/DL, email. No fees. Sysop: Noel Anklam. [Exp. #107.]

Activist. (510)532-6248. 1200/2400/9600/14,400. Files/msgs on politics, conspircy, technol, privcy, histry, philosphy, ethics, arts. Sysop: Walter Alter. [Exp. #108.]

Alternate Reality BBS. (510)559-9151. 9600. Role-playing games, online games, msgs, text files, shareware, and more. [Exp. #109.]

Amador Valley High School BBS. (510)484-3005. 8-N-1, 24 hrs., 1200/2400. Free. [Exp. #107.]

Amiga Addicts Anonymous BBS. (510)680-2850. 8-N-1, 24 hrs., 1200/2400/9600. Amiga files. Free. Sysop: Stanley R. [Exp. #109.]

Bay Area OS/2 BBS. (510)657-7948. 8-N-1, 2400/9600. OS/2 files and conferences. Free. Sysop: Greg Altman. [Exp. #109.]

BayView Graphics BBS. (510)799-6456. 8-N-1, 300–57,600. Graphics, telecommunications, & utils. BRRAnet, echo mail. Sysop: Bob Rider. [Exp. #108.]

The Billboard. (510)429-0801. 24 hrs., 2400/9600/14,400. Dual CD-ROMs, msg bases, online games, 27,000+ files. Free. Sysop: Bill Laster. [Exp. #109.]

Blue Smoke CD-ROM BBS. (510)455-5587. 24 hrs., 2400/9600/14,400. Access 9000 files, fidonet, email, matchmaker. No ratio, free. [Exp. #107.]

Bust Out BBS. (510)888-1443. 24 hrs., 14,400. Six nodes, 3GB, huge msg and file network (many adult). Computer systems and software services. Sysop: Alex J. Riggs. [Exp. #109.]

California High-Flyers BBS. (510)568-9250. 8-N-1, 24 hrs., 300/1200/2400. More Bay Area numbers, nine lines, chat, email, library. Ages 10 and up. Two subscription levels. Sysop: Carl Dominic. [Exp. #107.]

Camphor Fountain BBS. (510)547-5741. 8-N-1, 2400. Law, family life, creative writing, recovery, world religions. Seven networks. No fee. Sysop: Linda Martin. [Exp. #109.]

The Chemical Want Ads. (510)449-4778. 8-N-1, 14,400. BBS for the Chemical industry. Forum for discussion of topics as well as classified ad section. Sysop: Kevin Johnson. [Exp. #108.]

The Clubhouse BBS, Hayward Chapter. (510)785-1123. 24 hrs., 14,400 Genealogy, Teen, WordPerfect, Lotus, dBASE, nudist/naturist, plus many more national echos. [Exp. #109.]

Compupal. (510)538-2040. 8-N-1, 24 hrs., 1200/2400. IBM PD, sports and Bible files, 120MB, nationwide message conferences. Sysop: Richard Yim. [Exp. #109.]

Computer Communications BBS. (510)672-9325. 8-N-1, 14,400. Member of Fidonet, PowerNet, and Mustang Software's Support Net echos. [Exp. #107.]

The Creative Dimensions BBS. (510)484-4944. 24 hrs., 1200/2400. Home of CD-MAN and more. Free downloads on first call. [Exp. #109.]

CyberBBS. (510)527-9012. 8-N-1, 2400. VR, cyber culture, music tech, discussions. [Exp. #108.]

Dear Theophilus BBS. (510)831-THEO. 300/1200/2400/9600/14,400. Games, 8000 Mac files, discussion, God talk. Free. Sysop: Mark Spaulding. [Exp. #108.]

Delta BBS. (510)778-3714. 24 hrs., 1200/2400/9600/14,400. 40+ online games, msg bases, and transfer section w/out ratios. Free. Sysop: Phantom. [Exp. #107.]

DVPC BBS. (510)943-6238. 8-N-1, 300–14,400. [Exp. #107.]

The Eagle's Lair. (510)370-6460. The Musicians BBS, free listings and adds. Online magazine *Rock the House*, games, transfers, FoxNet. [Exp. #109.]

Entrepreneur On-Line BBS. (510)791-0259. 8-N-1, 2400. Multi-node, 135,000MB online, small-businessperson theme. Free IBM download first call. [Exp. #108.]

FrEdMail Oakland. (510)834-2636. 1200/2400/9600. Educator/student network w/ Internet mail access, OUSD Bilingual Ed support BBS. [Exp. #108.]

FrEdMail Snlndro. (510)895-1785. 1200/2400/9600. Educator/student network with Internet mail access, San Leandro HS, NorCal Hub. [Exp. #108.]

Galaxy BBS. (510)623-8933. 24 hrs., 300/1200/2400/9600/14,400. Provides support to Galaxy Multimedia Audio/Video products. Sound, music, games, DOS, and Windows. [Exp. #107.]

GIFt Shop. (510)689-4686, 689-4378. 24 hrs. Four lines, HiQuality graphics & animations, Windows, OS/2, DESQview, networking utils, multimedia, sound clips. Sysop: Waik Gan. [Exp. #109.]

GMV-BBS. (510)294-9052. 24 hrs., 300/1200/2400/9600. Multiline subscription BBS. Teleconference, private chat, email, SIGs, games, and file library for Amiga, IBM, Apple 8-bit, and Mac. Livermore. [Exp. #108.]

Gold Diggers BBS. (510)568-7807,,,23,23. 24 hrs., 2400–19,200. IBM, Atari ST, Amiga, and Mac, files and messages. Registration. $10/yr. Sysop: Harry H. Goldberg. [Exp. #108.]

Gospel Ministry Through PC. (510)932-8778. 8-N-1, 12:00 am–12:00 pm. 300/1200/2400/9600. Bible promises and daily devotion readings. Sysop: Dr. Daniel Maedjaja. [Exp. #109.]

Haddocks's Rations. (510)655-0145. From the ridiculous to the sublime. Raise your glass! Free. [Exp. #109.]

The HomeShopper Online. (510)687-3633. 8-N-1, 1200/2400/9600. Hardware, software, and services. Sysop: Max. [Exp. #107.]

IISME–Net. (510)643-6258. 300/1200/2400/9600. Industry Initiatives for Science & Math Ed., Lawrence Hall of Science, K12net educator/students network. [Exp. #108.]

Imperial City BBS. (510)631-1569. 24 hrs., 14,400. Many files, interesting msgs. No fees. Sysop: Byzantine and XModem. [Exp. #108.]

Initiative BBS. (510)654-2253. 8-N-1, 300/1200/2400. A political board established to support the Committees of Correspondence. Devoted to documents and discussion related to the left in this country and the future of the left. Sysop: Steve Willett. [Exp. #108.]

Kanon Tech BBS. (510)235-6839. 8-N-1, 24 hrs., 300/1200/2400/9600/14,400. C libraries, shareware, Echomail net, commercial software/hardware online store. [Exp. #107.]

An Open Letter to Software Vendors from Business World Products and Microsoft Corporation

Business World Products and Microsoft Corporation announce the settlement of litigation initiated by Microsoft against Business World Products and others alleging the unauthorized copying and distribution of Microsoft's computer software product Microsoft® MS-DOS®.

Software vendors who distribute counterfeit copies of Microsoft's Computer Software Products may incur liability for substantial money damages for copyright infringement and trademark infringement, or even face criminal prosecution. **Lack of knowledge that the product is counterfeit is not a defense.**

Becoming involved in the manufacture or distribution of counterfeit Microsoft Software Computer Products can prove to be a costly mistake. Other computer software vendors can avoid making this mistake by verifying that any Microsoft Computer Software it intends to distribute is legitimate and not counterfeit. **Before purchasing Microsoft Software Product that may place your company at risk, contact Microsoft's Piracy Hotline (1-800-NOCOPYN) to verify that you are purchasing legitimate Microsoft Computer Software.**

BBSes

The Krypt BBS. (510)447-4623. 1200/2400/9600/14,400. Full multimedia support BBS. Sysop: Donovan Sobrero. [Exp. #108.]

MDBJ. (510)658-8078. 2400. A BBS for women on the edge. NIRVANAnet. [Exp. #107.]

The New-Ark BBS. (510)796-0947. 24 hrs., 2400/9600. Tradewars, running on two CD-ROMs. Reg required. Sysop: Hiram Wolf. [Exp. #108.]

NightLine BBS. (510)234-1053. 1200/2400/9600/14,400. Nationwide Echo link for veterans' and men's issues conferences. Free. Sysop: Jon Mankowski. [Exp. #107.]

Nightline-Vetlink BBS. (510)273-7830. 300/1200/2400/9600/14,400. Nationwide Echo mail link for veterans and others. DOS and Windows files. Free. Sysop: Jon Mansowski. [Exp. #109.]

Olde Stuff BBS. (510)530-3051. 8-N-1, 24 hrs., 2400. Antiques & Collectibles. Buy, sell, learn. Sysop: Bill Clark. [Exp. #109.]

Omikron BBS. (510)657-8820. 24 hrs., 14,400. Mac files and discussions. Fremont. No download limits. Free access. [Exp. #107.]

Otherworld Express. (510)843-9523. 8-N-1, 24 hrs., 2400. Msgs, text files, shareware, freeware, train motif. Free. Sysop: Conductor Chaos. [Exp. #109.]

The Phantom Zone BBS. (510)538-9586. 8-N-1, 24 hrs., 300/1200/2400/9600/14,400. Online games, offline mail reader. Free access. Sysop: Paul Graydon. [Exp. #107.]

Psychic Link BBS. (510)849-3539. 24 hrs., 2400. Share with others interested in psychic abilities and energy. International caller base. Shareware. [Exp. #108.]

Quasatron BBS. (510)846-6085. 24 hrs., 9600. IBM, Ham radio, electronics, games, graphics, utils, etc. No fees. Sysop: KC Mazie. [Exp. #109.]

Realitycheck. (510)527-1662. Moved to Albany. Instant access, no fee. NIRVANAnet. [Exp. #107.]

Records Dept. BBS. (510)426-0470, 426-0793. Amiga, IBM, Mac, Fidonet, games, chat. Free, extras for subscribers. [Exp. #108.]

Russian Connection BBS. (510)651-6809. 8-N-1, 24 hrs., 2400. USA-Russian business/politics oriented. Membership available. Sysop: Alex Alshvang. [Exp. #109.]

SpeakEasy. (510)522-1700. 8-N-1, 14,400. 16 lines, downloadable program for mouse support. Files, chat, Internet access soon. Sysop: Jim Kestler. [Exp. #108.]

Tiger Team. (510)268-0102. 14,400. Games, data encryption, PC Security, Buddhism, GIFs, Fidonet, Dharmanet. Star Trek conference. Free. [Exp. #109.]

The Transfer Station BBS. (510)837-4610, 837-5591. 8-N-1, 24 hrs. Free Internet/USENET access. Lrg DOS/Windows/OS2 library. No fees. [Exp. #109.]

Viper 1 Premium BBS. (510)535-0231, 535-0315. 8-N-1, 24 hrs., 2400/9600/19,200. Multiline, 900MB, 1.3GB online, large adult file areas, games, file scanning facilities online. [Exp. #107.]

Windows Online. (510)736-8343. Windows BBS and publisher of WinOnLine Review. Over 9,500 Win 3.x & 20,000 DOS files, 7GB, 13 lines using USR-DS modems. Free trial. [Exp. #108.]

Winshare BBS. (510)686-4464. Multi-node, your connection point for Windows/DOS shareware/support. Running Wildcat! Free trial account. [Exp. #109.]

Wishing Well BBS. (510)745-7901. Email, matchmaker, files, 100+ online games, adult sig/files, ANSI art, and more Sysop: MaryLou White. [Exp. #109.]

Worldview BBS. (510)676-2919. 8-N-1, 24 hrs. 1200–14,400. Reformed Christian perspective, files/discussion on philosophy, public policy. $49/yr. Sysop: Bill Gram-Reefer. [Exp. #109.]

707

The Black Rose. (707)557-6444. 24 hrs., 300/1200/2400. Commodore 64/128 BBS, running Image v1.2a and a NISSA Network Assoc. ANSI graphic menu, health msgs. Sysop: Captain Keelhaul. [Exp. #107.]

Dave & Jean's BBS. (707)554-3801. 8-N-1, 300/1200/2400/9600/14,400. IBM, online games, files, msgs, and more. Free access. Sysop: Dave & Jean J. [Exp. #107.]

Dobbs Enterprises. (707)427-0277. 300/1200/2400/9600. 6 CD-ROMs, UN'I Net, 60,000+ files online, multi-line. [Exp. #109.]

Mnemonic BBS. (707)451-8353. 300/1200/2400/9600/14,400. 2 CD-ROMs, 10,000+ files, netmail, doors. [Exp. #109.]

Recommended BBS. (707)448-2225. 24 hrs., 300/1200/2400. Multiuser games, teleconference, conversational, and technical areas, 16 lines. All welcome. Sysop: Jay C. Parangalan. [Exp. #109.]

The Software Zone. (707)765-2447. 2400/9600/14,400. 3000+ files, programming oriented. TRUE graphical interface. [Exp. #108.]

The WINd Tunnel. (707)421-0380. 24 hrs., 1200/2400/9600/14,400. Windows programs and utilities, WAV's, GIF's, doors, and conferences. Sysop: John Wright. [Exp. #107.]

916

24th Street Exchange. (916)451-7179. 8-N-1, 24 hrs., 300/1200/2400/9600/14,400. 16 lines, 4 CD-ROMs, well-maintained. [Exp. #108.]

Starship Enterprise BBS. (916)338-4674. 8-N-1, 300/1200/2400/9600. 330MB, CD-ROM, IBM, Amiga, HP95LX Palmtop, Ham, Sacramento Clarion User Group. Sysop: Aaron Bond. [Exp. #109.]

ASSOCIATIONS

American Association For Artificial Intelligence (AAAI). Call: (415)328-3123. Email: membership@aaai.org. [Exp. #107.]

Association For Women In Computing. Meetings: 1st Wed., 5:30 pm, San Francisco. Call: (415)979-8450. [Exp. #107.]

The Association For Worldwide Software Support Management. Meetings: 2nd Tues., Milpitas Sheraton. Call: Mikael Blaisdell, (415)865-1323. [Exp. #109.]

Computer Professionals For Social Responsibility. Meetings: 2nd Wed., 7:30 pm, UC Berkeley, Evans Hall, Rm. 608-7. Call: Judy Stern, (510)643-7499. [Exp. #109.]

IEEE Computer Society, San Francisco Chapter. Meetings: Varying Weds, 7:00 pm, SF State. Call: (415)905-4400. [Exp. #109.]

Independent Computer Consultants Association, Northern California Chapter. Meetings are open to all. Only national trade assoc. comprising non-aligned working computer professionals with in-the-trenches experience. Call: ICCA, (415)441-2948. [Exp. #106.]

North Bay Systems Professionals. Meetings: 3rd Wed., 7:00 pm, Holiday Inn, Terra Linda, 1010 Northgate Dr., San Rafael. NBSP provides a forum and network for systems professionals. Call: Harry Chapman, (415)291-0174. [Exp. #109.]

San Francisco Robotics Society Of America. Meetings: 1st Wed., 8:00 pm, Exploratorium, San Francisco. Free. Call: Brad Smallridge, (415)550-0588. [Exp. #111.]

Society For Technical Communication, San Francisco Chapter. Meetings: 3rd Wed. Call: (415)985-7121. [Exp. #107.]

Software Entrepreneurs' Forum. 3rd Wed., 6:30 pm, Elk's Lodge, 4249 El Camono, Palo Alto. Industry association dedicated to software developers and entrepreneurs, offering information and education on all facets of the software industry. Call: Information, (415)854-7219; reservations, (415)965-9003. [Exp. #109.]

United Sysops Association. Meetings: 2nd Wed., 7:00 pm, Coco's, 1035 S. Mary Ave., Sunnyvale. Organization of bulletin board sysops and users. Call: Bill Strouse, (408)739-9081. BBS: (408)739-8753. [Exp. #109.]

USER GROUPS

ACCESS

Microsoft Access Developers Group. Now forming. Downtown San Francisco. Send name, address, and fax # to receive meeting and membership info, to: Computer/Management Solutions, 235 Montgomery St., #750, SF, CA 94104 [Exp. #110.]

ADOBE

Systems Adobe Technology Exchange: San Francisco Peninsula/South Bay Chapter. Meetings: 2nd Wed., 7:00 pm, M&T Publishing, 411 Borel Ave., San Mateo. Call: ATX, (408)562-6104. [Exp. #109.]

AMIGA

3rd Dimension—Imagine/Lightwave User Group. Meetings: 1st & 3rd Mon., Computer Showcase, 2739 Geary Blvd., SF. Call: Ollie, (415)863-8792. [Exp. #110.]

AAA—Amiga Addicts Anonymous. Meetings: 3rd Tues., Concord Water District Bldg., 1311 Concord Ave. Classes, monthly disks, info line. Call: (510)935-0829. [Exp. #109.]

ACCESS—Amiga & Commodore Computer Enthusiasts Society. Meetings: 2nd Thurs., 7:00 pm, Livermore Airport Terminal. Call: Paul, (510)829-6053. [Exp. #109.]

AUM—Amiga Users Of Marin. Meetings: 3rd Wed., 7:30 pm, College of Marin Science Center, Rm. 191, Kentfield. Beginners class at 6:00 pm. Call: (415)456-1411. BBS: (415)485-5895. [Exp. #112.]

AWEST Amiga Users In SF. Meetings: 1st Thurs., 7:00 pm, Laguna Honda School, Conference Rm., 1350 7th Ave., San Francisco. Call: (415)584-8406. BBS: (415)824-8774. [Exp. #112.]

FAUG—First Amiga User Group. Meetings: 1st Tues., 7:30 pm, HT Electronics, 275 N. Matilda Ave., Sunnyvale. Q &A, new product demos, public domain software. Call: Mike Fisher, (415)855-9816; BBS: (415)595-2479; Usenet: mikef@hpspd.hp.com. [Exp. #111.]

RE—AMIGA Redwood Empire Amiga User Group. Meetings: 3rd Tues., 7:30 pm, Rohert Park Jr. HS, RM. C-5, 7165 Burton Ave., Rohnert Park. Call: (707)523-9978. BBS: (707)795-2717. [Exp. #112.]

TOGA—The Other Group Of Amigoids. Meetings: Varying Sat., 12:30 pm, Milpitas Library, 40 N. Milpitas Blvd. Call: Lawrence Brown, (408)984-6036. [Exp. #108.]

APPLE

PAUG—Peninsula Apple User Group. Meetings: 3rd Thurs., 7:00 pm, Ampex Cafeteria, 411 Broadway, Redwood City. All Apples. Beginners, advanced, Q&A, new product demon, PD software. Call: Roger Laker, (415)367-8657. [Exp. #112.]

AT&T

AT&T Computer User Group. Meetings: 1st Wed., general discussion at 6:00 pm, main program at 7:00 pm, 50 Fremont St., 40th Floor, San Francisco. Call: Jim Lansing, (415)885-6631 or Joe Mahoney, (415)584-6510. [Exp. #111.]

AT&T UNIX Computer User Group. Meetings: 4th Wed., main program begins at 7:00 pm, location varies, South Bay area. Call: Thad Floryan, (408)985-7100; USENET, thad@cup.portal.com. [Exp. #111.]

ATARI

BAAUG (Bay Area Atari Users Group). Meetings: 1st Mon., 7:00 pm, Agnews Aud., Santa Clara. Call: Andres Barbiero, (408)986-9787. BBS: (408)986-0215. [Exp. #107.]

DACE—Diablo Atari Computer Enthusiasts. Meetings: 1st Thurs., Contra Costa Water District Bldg., 1331 Concord Ave., Concord. Call: Dan Galant, (510)689-8256. [Exp. #109.]

COMMODORE

ACCESS—Amiga & Commodore Computer Enthusiasts Society. Meetings: 2nd Thurs., 7:00 pm, Livermore Airport Terminal. Call: Paul, (510)829-6053. [Exp. #109.]

C=HUG (Commodore Hayward User Group). Meetings: 2nd Sat., 2:00 pm, Palma Ceia Park. (510)531-3734. [Exp. #112.]

CWEST Commodore 64/128. Meetings: 3rd. Mon., 7:00 pm, UC Med Center, Bldg. C, Rm. C-213, 521 Parnassus, San Francisco. Call: (415)626-9946. [Exp. #112.]

CONTACT MANAGEMENT

Bay Area TeleMagic User Group. Meetings: 2nd Wed., 4:00 pm. Call: George Workman, (408)476-6385. [Exp. #110.]

The Golden Gate Telemagic User Group. Meetings: 2nd Wed., 4:30 pm, Flood Bldg., Room 1213, 870 Market St., San Francisco. Call: 1-800-238-3370. [Exp. #109.]

CP/M

San Francisco Computer Society. Meetings: 7:00 pm, Laguna Honda School, 1350 7th Ave., San Francisco. Call: Ralph Gallegher, (415)929-0252. [Exp. #109.]

dBASE

Association Of Database Developers, dBASE SIG. Meetings: 4th Tues., 7:30 pm, The Gatehouse, Ft. Mason Center. $5.00 guest fee, free to ADD members. Call: (415)281-5638. [Exp. #110.]

Association Of Database Developers, Fox SIG. Meetings: 1st Thurs., 7:00 pm, PG&E Tower, 77 Beale St., Rm. 1760. $5.00 guest fee, free to ADD members. Call: (415)281-5638. [Exp. #110.]

DEC

BayVAC. Meetings: approx. monthly. Users of DEC hardware and software. Call: Rich Taylor, (408)776-4978. [Exp. #112.]

FREEDOM, PRIVACY, AND TECHNOLOGY

BMUG SIG On Freedom, Privacy, And Technology. Meetings: Last Sun., 2:00 pm, BMUG office, 2055 Center St., Berkeley. Call: Judi Clark, (510)549-2684. [Exp. #110.]

IBM AND COMPATIBLES

Berkeley PC User Group. Meet-

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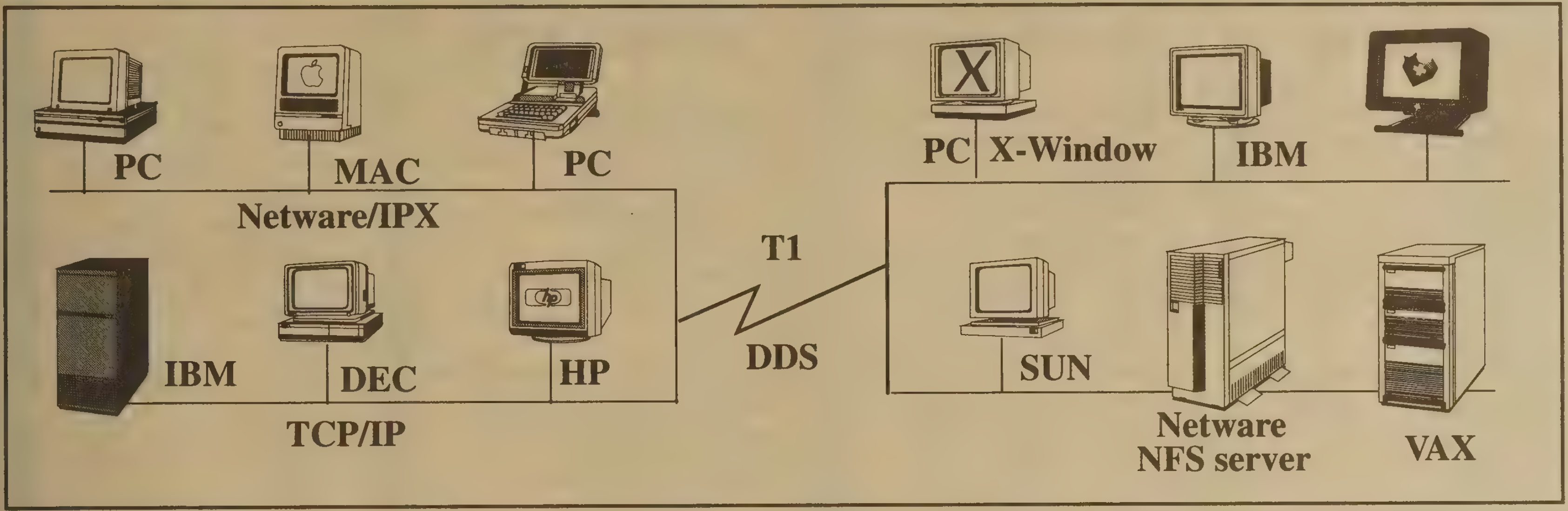

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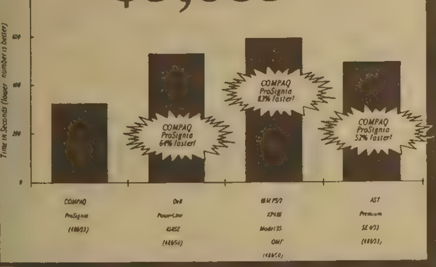

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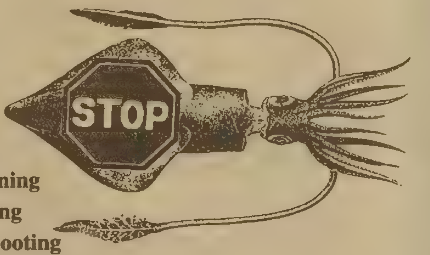

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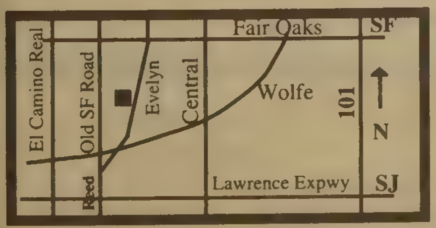

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PC UPGRADES WELCOME

ings: 2nd Mon., 7:00 pm, Winners Circle Systems, 2618 Telegraph Ave., Berkeley. Presentations followed by discussion, PD library, newsletter, Geo Ensemble SIG. No charge. Call: Mel Mann, (510)526-4033. [Exp. #110.]

Delta PC Users Group. Meetings: 3rd Sat., 10:00 am. Pittsburg Adult Ed., Rm. 23, 20 E. 10th St. Call: (510)427-2255, ext. 744. [Exp. #110.]

DVPC—Diablo Valley User Group. Meetings: 1st Thurs., 7:30 pm, Bank of America, Bldg. B, Clayton Rd. at Galindo, Walnut Creek. SIGs include WordPerfect, Windows, Paradox, Beginner's, Visual Basic, education/entertainment, and new users. Call: (510)943-1367. [Exp. #110.]

EastBay FOG. Meetings: 2nd Wed., 7:30 pm, Episcopal Church of St. John-in-Montclair, 1707 Gouldin Rd., Montclair. All microcomputers, MS-DOS, CP/M. Call: (510)653-2627. [Exp. #109.]

Golden Gate Computer Society (GGCS). Meetings: 4th Mon. 6:45 pm, San Rafael Community Center. Free intro to computers class at 6:00 pm. Call: (415)927-2909. [Exp. #107.]

IBM Technical SIG. Meetings: 2nd Thurs., 7:00 pm, Cubberley Community Center, 4000 Middlefield Rd., Rm. H-1, Palo Alto. Sponsored by Software Entrepreneurs' Forum. Call:Peter Harris, (415)329-1880. [Exp. #110.]

Micromate–CP/M–DOS Users Group. Meetings: 1st Thurs., 7:30 pm, Eclectic computer buffs. Chabot Observatory, 4917 Mountain Blvd., Oakland. Call: Ed Miller, (510)376-1611. [Exp. #109.]

PC Clone User Group. Meetings: 2nd Mon., 7:00 pm, Ft. Mason, Rm. C217. Visitors $3. Call: (510)684-0107. BBS: (415)652-1736 [Exp. #110.]

PC Clubhouse. Meetings: 1st Fri., 7:30 pm, Meiklejohn Hall, CSU Hayward. To share knowledge and PD/shareware software. Club has several BBSes in East Bay and Amador Valley. Call: (510)483-9500, 429-1007. BBS: (510)889-1932 (Hayward). [Exp. #112.]

PC Users Group Of The Redwoods (PCUGR). Meetings: 2nd Thurs., 6:30 pm, Santa Rosa Veterans Memorial Building. Call: (707)527-USER. [Exp. #110.]

Peninsula Computer Club. Meetings: 2nd Thurs., 7:30 pm, Social Room, 222 Laurel St., San Carlos. DOS and CP/M libraries. Call: Larry Welling, (415)593-9981. BBS (415)571-9259. [Exp. #109.]

San Francisco Business Computers. Meetings: 4th Tues., 5:30 pm. For those who use computers in business. Visitors $5. Call: Jordan Rosenberg, (415)788-5338. [Exp. #111.]

San Francisco PC Users Group. Meetings: 3rd Tues., 6:15 pm SIGs, 7:30 pm General Meeting. Fort Mason, Bldg. A. Call: (415)979-5879. [Exp. #112.]

Stanford Palo Alto Area User Group. Meetings: Last Wed., 7:30 pm, Varian Aud., Stanford. DOS/Windows. Call: (415)329-8252. [Exp. #112.]

KNOWLEDGEMAN

Bay Area KnowledgeMan (And Guru) User Group. Meetings: 1st Tues., 6:30 pm., JNZ, Inc., 826 Las Trampas Rd., Lafayette. A forum for discussion and info concerning mdbs products, esp. KnowledgeMan and Guru. Call: (510)947-4878. [Exp. #107.]

LANTASTIC

LANtastic User Group Of The East Bay. Meetings: 6:00 pm, 2770 Marin Blvd., Berkeley. Call: Loretta, (510)444-1441. [Exp. #109.]

LAPTOPS

HPX HP Laptops & Handhelds. Meetings: 2nd Sat., Sunnyvale. Call: Michael Felsenstein, (415)564-8279. [Exp. #111.]

LEGAL

SF Bar Assoc. WordPerfect User Group. Meetings: 3rd Wed., noon of odd numbered months. Brown bag meetings. SF Bar Assoc. Boardroom, 7th Fl., 685 Market St. Call: (415)421-5650. [Exp. #111.]

MACINTOSH

A32 Macintosh User Group. Meetings: 2nd Sat., 10:00 am, GTE Bldg 3 Cafeteria, 100 Ferguson Dr., Mountain View, corner of Central Expressway and Highway 237. Call: (408)263-0398. [Exp. #111.]

BMUG—Berkeley Macintosh User Group. Meetings: Every Thurs., 6:00 pm, Physical Sciences Lecture Hall, UC Berkeley Campus. Call: (510)549-BMUG. [Exp. #109.]

Diablo Valley Macintosh User Group (DVMUG). Meetings: 3rd Tues., 7:00 pm, Old Republic Title Co., 3000 Clatyon Rd., Concord. Get together w/Mac and Performa users. Enjoyable SIG meetings. Call: (510)945-4548. [Exp. #111.]

International Macintosh User Group (IMUG). Meetings: 3rd Thurs., 6:45 pm, location varies. A forum for multilingual computing. Call: Roger Sherman, (415)859-5146. [Exp. #111.]

Let's Go Macintosh Computer Society. Meetings: 3rd Thurs., 7:00 pm, Skyline Jr. College, Media Center, Rm. 2105, San Bruno. See and try interesting new products, meet other Mac users, hear guest speakers. Call: Fidel Cajulao, (415)221-2995, or Nolan Apostle, (510)947-2523. [Exp. #108.]

Macintosh SIG. Meetings: 3rd Tues., 7:00 pm, Apple Cafeteria, City Center 4, De Anza and Rodrigues, Cupertino. Sponsored by Software Entrepreneurs' Forum. Call: Jeff Cherniss, (408)999-2524. [Exp. #110.]

MaCruzers. Meetings: 2nd Wed., Santa Cruz. Call: Peter Visel, (408)454-0403. [Exp. #109.]

Macs Of Marin. Meetings: Last Wed., 7:30 pm, Corte Madera Rec Center, 498 Tamalpais Dr., Corte Madera. Marin County Mac User Group for all levels of expertise, beginners welcome, SIGs. [Exp. #112.]

PAUG—Peninsula Apple User Group. Meetings: 3rd Thurs., 7:00 pm, Ampex Cafeteria, 411 Broadway, Redwood City. All Apples. Beginners, advances, Q&A, new product demos, PD software. Call: Roger Laker, (415)367-8657. [Exp. #112.]

SPC Apple User Group. Meetings: 2nd Wed., 7:30 pm, Fremont Main Public Library, 2400 Stevenson Blvd. Call: Dean Fearn, (510)881-9160. [Exp. #112.]

MULTIMEDIA

DesignSIG. Meetings: 3rd Tues., 6:00 pm. New SIG open to independent businesspeople in graphic arts, word processing, and related fields. Focus to share concerns and solutions related to running own business. Call: Bill Brent, (415)282-7368. [Exp. #111.]

International Interactive Communications Society—IICS. Meetings: 2nd Tues., 7:00 pm, alternate locations San Francisco and south bay. For people involved or interested in developing and using interactive multimedia technologies. Call: IICS Hotline, (415)328-7318. [Exp. #112.]

Macromedia User Forum. Meetings: 1st Wed., 7:00 pm, 600 Townsend, at 7th St., San Francisco. Authoring, 3-D, content, and tools. Call: John Dowdell, (415)665-3916 (days); email: 71165.3065@compuserve.com. [Exp. #112.]

Multimedia SIG. Meetings: 1st Thurs., 7:00 pm. SIG of Software Entrepreneurs' Forum. Call: Ralph Gilman, (408)746-0551. [Exp. #111.]

North Bay Multimedia Association (NBMA). Meetings: 3rd Thurs., 7:00 pm, alternated locations. Call: Luong Tom, (415)459-0441. AOL:NBMA. [Exp. #109.]

NANOTECHNOLOGY

Nanosystems Study Group. Meetings: Alternate Mondays, 7:30 pm, University Lutheran Church, 1611 Stanford Ave., Palo Alto. The study group will go through Eric Drexler's book, *Nanosystems: Molecular Machinery, Manufacturing, and Computation.* Announcements and mailing list, contact: Ted Kaehler, email: Kaehler2@AppleLink.Apple.com. Phone: (408)974-6241. [Exp. #110.]

The Assembler Multitude. Meetings: every other Mon., 7:30 pm, University Lutheran Church, 1611 Stanford Ave., Palo Alto. An open discussion of new technical developments in Nanotechnology and social consequences and dangers of Nanotechnology. Organized by Ted Kaehler. Email: Kaehler2@AppleLink.Apple.com. Address: 20525 Mariani Ave., MS 301-3D, Cupertino, CA 95015. [Exp. #110.]

NETWORKING

NetSIG. Meetings: 4th Tues., 7:00 pm, Novell Sunnyvale. Networking SIG for Software Developers. SEF group. Call: Skip Addison, (408)277-5867. [Exp. #111.]

NEXT

BANG—Bay Area NeXT Group. Meetings: 3rd Wed., 7:00 pm, Terman Aud., Stanford. Presentations and lectures. Call: (415)327-BANG. Email: info@BANG.org. [Exp. #109.]

NOVELL

Silicon Valley Novell User Group. Meetings: 3rd Wed., 6:30 pm, Sundowner Inn, corner of Ross and Mathilda, Sunnyvale. Call: Bill Strouse, (408)739-9081. BBS: (408)739-8753. [Exp. #112.]

OMNIS 7

GUIdata Bay Area Omnis 7 User Group. Meetings: 1st Mon. Newsletter, forum for all users. Call: Peter Bennett, (510)935-5203. [Exp. #107.]

OS/2

OS/2 Bay Area User Group. Meetings: 4th Mon., 7:00 pm. For anyone interested in OS/2. Presentations, product demos, questions and answers. Call: (415)755-3124. [Exp. #109.]

OS/2 SIG Of San Francisco. Meetings: 2nd Wed., 7:00 pm, location varies. Call: Margery Blum, (415)931-3110. [Exp. #112.]

PROGRAMMING LANGUAGES

APL Interest Group Of Northern CA. Meetings: 2nd Mon., 7:00 pm, Syntex Labs, 3401 Hillview Ave., Palo Alto. A member SIG of ACM. Call: (408)742-5277. [Exp. #110.]

C/C++ Programmers Network. Write: Rick Rowe, 3245 S. White Rd., Suite 106, San Jose, CA 95148-4056. Email: rown@netcom.com. [Exp. #109.]

Forth Interest Group Of North Bay. Meetings: 2nd Sat., 1:00 pm, 2055 Center St., Berkeley. Call: Leonard Morgenstern, (510)376-5241. [Exp. #109.]

Peninsula/South Bay Visual Basic SIG. Call: Allan Colby, (415)851-4657. [Exp. #110.]

Power BASIC Study Group. Meetings: Now forming. Call: Thipdar, (510)783-1972. [Exp. #111.]

Sacramento Forth Interest Group. Meetings: 4th Wed., 7:00 pm, SMUD, 1708 59th St., Rm. A., Sacramento. Call: Bob Nash, (916)487-2044. [Exp. #109.]

San Francisco North Bay Smalltalk/V User Group. Meetings: Every other month in downtown SF. Call: David Freihofner, (415)362-4283. Email: dfrei@well.sf.ca.us. [Exp. #112.]

SF Bay Area Visual BASIC User Group. Call: Gustavo Eydelteyn, (510)547-7295. [Exp. #111.]

Silicon Valley Forth Interest Group. Meetings: 4th Sat., 10:00 am, Applied Biosystems, Inc., Conference Room A/B, 230 Lincoln Centre Dr., Foster City. Call: Art Hampton, (415)873-8554. [Exp. #109.]

R:BASE

R:BASE Developers Group. For meetings and membership info, call: (415)956-1200. [Exp. #110.]

SQL

SQL_Forum/Bay Area SQL Database Server User Group. Meetings: Once a month in downtown SF. Oracle, SQL Server, SQLBase, and more. Call: Robert Gentry, DBBS, Inc. (415)583-3000. [Exp. #107.]

TELECOMMUNICATIONS

BMUG Telecom SIG. Meetings: Last Wed., 8:00 pm. How to use your modem, terminal programs, and the BMUG BBS. Call: (510)549-BMUG. [Exp. #107.]

TEXAS INSTRUMENTS

Santa Clara Valley TIPC Group. Meetings: 4th Thurs., 7:00 pm, Magnolia Inn, 176 S. Bernardo, Sunnyvale. Newsletter, library. Call: Ralph, (510)526-2492. [Exp. #109.]

TI-99/4A. Meetings: 2nd Sat., Oakland. Call: Fred, (510)530-8335. [Exp. #109.]

THEOS

Theos User Group. Call: (510)785-7355. [Exp. #108.]

UNIX/XENIX

N. California UNIX SIG. Meetings: New group, just forming. UNIX, XENIX, LINUX, Coherent. Call: Randy Just, (707)769-1648. [Exp. #112.]

UNIX SIG. Meetings: 2nd Tues., DEC, 800 W. El Camino Real, Mountain View. Sponsored by Software Entrepreneurs' Forum. Call: Priscilla Rowe, (415)776-0513. [Exp. #110.]

VIDEO TOASTER

Video Toaster User Group. Meetings: Last Thurs., 7:30 pm, HT Electronics, 275 N. Mathilda Ave., Sunnyvale. Special guests, equipment demos, hands-on workshops, plus info/tips on new System 2.0. $4 for non-members. Call: Andrew Timmins, (408)243-9233 (eve). [Exp. #108.]

VIRTUAL REALITY

Virtual Reality Group. Meetings: varies. VRG is a nonprofit organization dedicated to supporting and promoting the development of VR technologies in the Bay Area. Everyone welcome. Call: Linda Jacobson, (415)286-4716. Email contacts: Linda Jacobson (lindaj@well.sf.ca.us), Peter Rothman (avatarp@well.sf.ca.us), or Timothy Childs (tchilds@well.sf.ca.us). [Exp. #110.]

Virtual Reality SIG. Meetings: San Francisco, East Bay. Call: Mike Conduris, (415)566-8681. [Exp. #110.]

WINDOWS

BMUG Windows Programmers SIG. Meetings: 1st Tues., 6:30 pm, 2055 Center St., Berkeley. The Programmers SIG is a forum for Windows programmers of all levels to meet and exchange information. Call: Ferdinand Rios, (510)526-3031. [Exp. #109.]

WinSIG. Meetings: 1st Wed., 6:30 pm, Cubberley Community Center, Rm. H-1, 4000 Middlefield Rd., Palo Alto. Windows SIG of the Software Entrepreneurs' Forum. Call: Fran Finnegan, (415)288-4400. [Exp. #107.]

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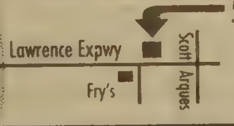

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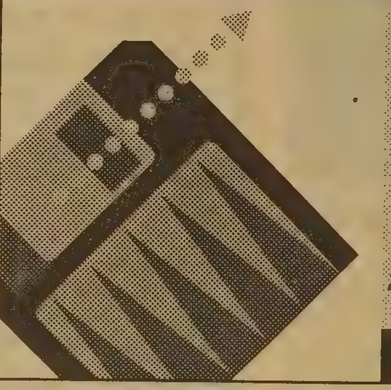

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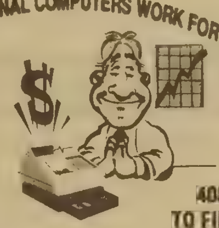

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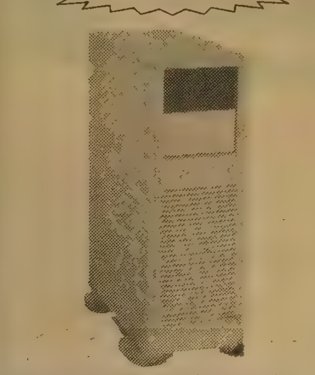

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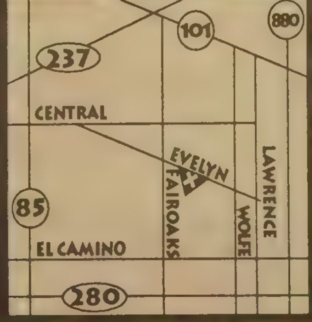

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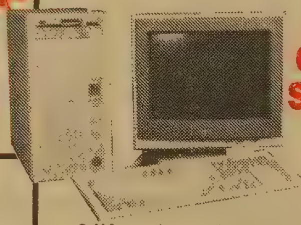

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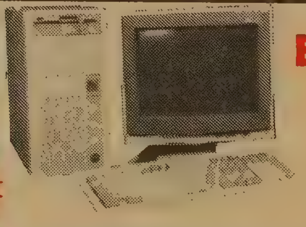

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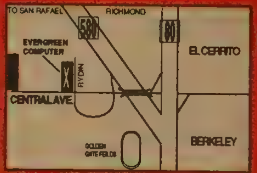

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ScanMan Model 256 & Ansel ™ Hand-Held Scanner

LOGITECH

ScanMan 32	$139
ScanMan 256	$259
ScanMan 256 w/Catchword PRO OCR	$319
ScanMan Hand-Held Color Scanner	$559

• Serial Mouseman 400dpi	$69
• Bus Mouseman 400dpi	69
• Cordless Mouseman 400dpi	109
• Serial TRACKMAN	89
• Bus TRACKMAN 320dpi	79
• First Mouse	39

MICROSOFT

• Serial Mouse	$79
• Bus Mouse	79
• Ball Point Mouse	109

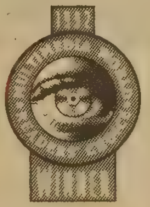
KENSINGTON

Imsi™

Turbo Mouse 4.0 $99

• PC Stylus Mouse & Trackball for CAD	$39
• Pet Mouse	29

WatchIT! TV



This system lets DOS and Windows users watch TV right on their PC Monitors. View an on-screen, full-color video window (via antenna, cable, VCR, or video camera hook-ups) while simultaneously running their standard computer applications.

- Live TV in a Window
- DOS/Windows 3.0/3.1
- Full 1/4 or 1/16 Size Window
- Framegrabbing
- Cable/Antenna Ready
- On-Screen Remote Control
- Installs in Minutes
- VCR and Camera Inputs
- VGA (640 x 480)

$299

WatchIT TV
WatchIT

FELLOWES

Anti-Glare Filter **$49**

Optical quality nylon mesh anti-glare filter for 14/15" montitors.

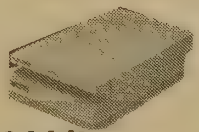
PANAMAX.

POWER PROTECTION

Six (6) Outlet Surge Suppressor **$59**

6 foot power cord, master on/off switch, resettable circuit breaker

TAMARACK



Professional Flatbed Color Scanner 600dpi, 24 bit Optional SKT Slide Scanner

ArtiScan™ from Tamarack gives you state-of-the-art resolution and impeccable image quality, 600 dpi, 24 bit per pixel (16 million colors and 256 gray levels). Supports both the PC and the Macintosh. SCSI interface for fast operation.

Tamarack 6000C 600DPI w/ Photostyler Software	$899
Tamarack 8000C 800DPI w/ Photostyler Software	1139
Tamarack 1200C 1200DPI w/ Photostyler Software	1669

VIDEO BOARDS

ATI TECHNOLOGIES

Graphics/Ultra+ 1MB/2MB ISA, DRAM 1280x768 Int., 1024x768 Non-Int. 65K Colors Accelerated	$299/359
GRAPH/Ultrapro 1MB/2MB ISA, VRAM 1280x1024 Non-Int., 1024x768 65K Colors Accelerated	$449/519

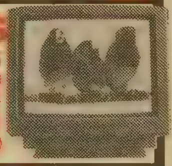
DIAMOND

Stealth™ 24	$199
Stealth™ 24 VLB	210
SpeedStar 24X 24-bit True w/1MB Color	189

ORCHID TECHNOLOGY

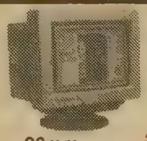
Fahrenheit 1280 1280x1024 w/1MB	$210
ProDesigner IIs 1024x768 w/1MB	119

ViewSonic™ MONITORS



5+	14"	1024x768	.25	NI	$51
6e	14"	1024x768	.28	NI	34
6FS	15"	1024x768	.28	NI	57
7	17"	1280x1024	.28	NI	99
8	20"	1280x1024	.31	NI	1569

NEC

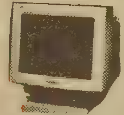


15"	3FGX	1024x768	28mm	$649
15"	4FG	1024x768	28mm	749
17"	5FG	1280x1024	28mm	1299
21"	6FG	1280x1024	28mm	2349

SONY®

14"	1304S	1024x768	25mm	$579
17"	CPD-1604S	1024x768	25mm	999
20"	GDM1936	1280x1024	20mm	2279

STANDARD TECHNOLOGIES



Super VGA Monitors

MSTAN-428-VESA 14" MONITOR
1024x768 Non-Interlaced $339

MSTAN-428D-UVGA 14" MONITOR
1024x768 Non-Interlaced $299

GoldStar

MONITORS

14" Interlaced	1024x768	.28mm	$278

COLORADO MEMORY SYSTEMS INC.

DJ-10 (120MB) QIC-49	$155
DJ-20 (250MB) QIC-80	209
AB-11 External tape port	45
FC-10 Controller	95
KE-10 Ext Kit	99
TC-15 Controller w/data compression	195

Trakker™

Parallel Printer Port External Tape Backup System

120MB External	$359
250MB External	$409

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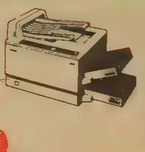
Panasonic Office Automation OA

KX-P4455
PostScript Laser



- 2MB RAM exp to 4MB
- Two 250 sheet paper trays
- 39 PostScript fonts • 11PPM

$1749

Accessories for 4455/4450i	
Legal Tray	$69
Envelope Tray	.69
Toner	39
Drum Unit	149
Developer	119

KX-P4450i $1095

KX-P4430
Laser Printer

NEW!

$888

- 1MB RAM exp to 5MB
- PCL-5 Scalable
- 300 dpi resolution • 5PPM
- 200 sheet paper capacity

KX-P4410
Laser Printer

$639

5ppm!

- 512K RAM exp. to 4.5MB
- 200 sheet paper capacity
- 300 dpi resolution • 5PPM

Panasonic Toner Cartridges

KX-P450	KX-P4450	$35
KX-P451	KX-P4420	35
KX-P453	KX-P4410 KX-P4430	35

KX-P2123
Quiet 24-pin
Color Capable
43.5 dBA!
$239

KX-P2180
Quiet 9-pin
Color Capable
45 dBA
$169

Color Option.....$49

KX-P2624	24-pin, 300cps, Free ATM	$379
KX-P2124	NEW	319

Canon

Portable
Bubble Jet
BJ-10ex

Perfect for any Notebook or Laptop!

- Prints up to 83cps
- Text & graphics up to 360 dpi
- Uses plain paper & transparencies
- 1-year warranty

$269

BJ-200 Laser Quality... At an InkJet Price

- Prints up to 4ppm
- 7 resident fonts
- 100-page sheet feeder
- Holds up to 10 envelopes

$359

CITIZEN PRINTERS

GSX-230 **$249**
- 24-pin printer
- Up to 270cps, 90cps LQ
- 8 Built-in fonts

GSX-145
- 132 column printer
- Color Option Only $69

$359

GSX-240
- 24-pin printer
- Up to 300cps, 99cps LQ
- 13 Built-in fonts, including 2 scalable

$299

PRINTERS

HEWLETT PACKARD *Authorized Dealer*

LaserJet 4/4M **$1349/1789**
8ppm, 600x600 dpi, 2/6MB w/Toner

LaserJet 3SI w/Toner **2799**
7ppm, Network Compatible, 1MB

LaserJet 3P w/Toner **875**
4ppm, 1MB

LaserJet 2P Plus w/Toner **775**
4ppm, 512K

DeskJet 550C **689**
300dpi, Color Ink Jet

DeskJet 500 **389**

DeskJet Portable **379**

HP TONER CARTRIDGES

HP 92275A HP IIP, IIP+, IIIP	$79
HP 92295A HP IID, II, III, IVD	89
HP 92291A HP ILsi	119
HP 92298A HP4	109

Laser Printer MEMORY!!

	1MB	2MB	3MB	4MB
HPII/IID	N/A	$125	$160	$180
HPIIP/III/IIID/IIIP	N/A	125	160	180
Panasonic KX-P4420	N/A	139	175	189
IBM 4019	109	149	309	N/A
Epson EPL-6000	140	155	190	N/A
Epson EPL-7000	N/A	90	140	N/A
Okidata 400/800	100	150	N/A	N/A
Brother HL-4	130	180	230	280

NEC

LC-95 Printer
$1,349

- Adobe PostScript &HP II Emulation
- 6 PPM Laser Printer
- 300 dpi
- Apple Talk, Parallel and Serial Interface
- 2MB of Memory
- 35 Scalable Typefaces, 14HP Bitmapped Fonts
- Universal Paper Tray

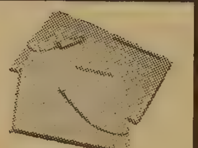
Toner Cartridges

#20-055LL Silentwriter 2 Model 90/95 **$189**

DIGITIZERS

Summagraphics logo

Summasketch III **NEW**
12"x12" 4 Button Cursor
$299



Summasketch III NEW
12"x18" Pro, 4 Button Cursor
$549

ACCECAT 5"x5" GRAPHICS TABLET

5"x5" Active Area - Includes 2-button Stylus-Pen and Utilities Diskette with Custom Mouse, Windows, ADI drivers, and Windows control panel program.

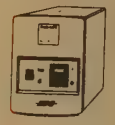
$119

PC XT/AT/386/486 Compatible

American Power Conversion APC

Backup Power Supplies at Great Prices!

BK250B 200-200VA; back-up power for 386SX, 286SX, 286, XT's and AT's **$109**



BK450 400-450VA; back-up power for Tower 386, 486 systems, servers; with network interface **$209**

BK600 Back-up power for heavily configured 386, 486 systems; CAD/CAM **$279**

Call for other models!

AP900 Smart-Ups 900
900 VA 286, 386, 486 Servers
Multiple systems, Longer runtime **$599**

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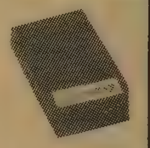
External-Pocket "Comm-panion"



96/24 Fax/Modem
True Pocket-Size Fax Modem
For Notebooks **$89**

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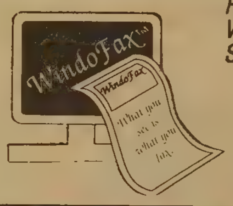
Turn your PC into a Communications Center!
FAX & MODEM NOW INCLUDED!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WindoFax
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Fax directly from any Windows™ application program. Supports Windows 3.0 or higher

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V.32 Bis/V.42 Bis 57,600 BPS Throughput

Hi-Per 96/14.4 Vi

High Speed 14,400 BPS
Internal Modem

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Made in USA - 5 Year Warranty

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Optima 96 v.42, MNP5 Ext	$369
Optima 96 Ext + Fax 96	395
Optima 14.4 Ext + Fax 14.4	495

INTEL

SatisFaxtion Modem with Faxability s/w 400 Int 96/14.4 v.42, MNP5	$495

ZOOM

96/96 fax modem MNP5 Int/Ext	$245/265
14.4/14.4 fax modem Int/Ext	265/295

PRACTICAL PERIPHERALS

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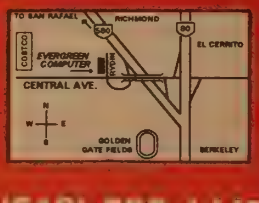

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Huge Selection of Notebooks & Accessories

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T1850

Introducing the Satellite™ T1850, one of three unique new products from the leader in portable computing!

- 25MHz i386™SX processor
- 4MB RAM exp. to 12MB
- VGA display with 64 gray scales
- 120MB Hard Drive
- 1.44MB Floppy Drive

Satellite
T1850

$1799

In Touch with Tomorrow

TOSHIBA

COLORFUL VALUE!

T1850C **THE NEW T1850C**

Introducing the Satellite™ T1850C, one of three unique new products from the leader in portable computing!

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- Bright VGA display
- 80MB Hard Drive
- 1.44MB Floppy Drive

Satellite
T1850C

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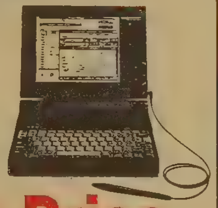
In Touch with Tomorrow

TOSHIBA

NEC UltraLite® SL/20P

- 386SL 20MHz Processor with 16KB Cache
- Optional 387™SX Coprocessor Socket
- 4MB of RAM expandable to 8MB
- 80MB (19ms) or 120MB (17ms) 2.5" Hard Disk Drive
- 1.44MB 3.5" Floppy Drive
- 640x480 VGA Graphics Display
- Pre-installed MS-DOS® 5.0 and Windows™ 3.1 with Pen Extensions
- 6.8 lbs.



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- 386SX-20
- 2MB RAM
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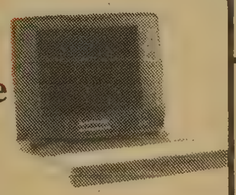
- Carrying Case



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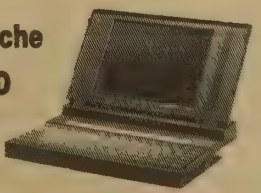
TEMPO Carrier SL/25

386SL-25MHz w/64K Cache

4MB RAM / 80MB HDD



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Removable Hard Drive & Battery
Multilevel Power Management

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- 386SL-25MHz • 64K Cache • 4MB RAM exp. to 20MB • Removable hard drive & battery • 3.5", 1.44 Floppy Drive • MS-DOS • Windows • Built-in Trackball • Carrying case

Unbelievable Price - High Quality **NEW**

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- 4MB RAM expandable to16MB
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- 2 Serial ports, 1 Parallel port
- Backlit black-and-white LCD, 640x480 VGA resolution
- 6.38 lbs including battery pack

Includes AC adapter/recharger, power cord, user guide, utility disk, carry bag

intel inside

LEO486SX25 $1,719
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UltraLite® SL/25C

- i386SL-25MHz 64K Cache
- 2MB RAM exp to 10MB
- 80MB Hard Drive
- 9.5" Color VGA Display
- High-speed enhanced parallel port
- Small 9"x11.5" footprint
- Weight 7.5 lbs

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NEC

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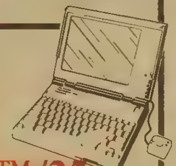

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TravelMate™ WinSLC™/25

486SLC performance at 386SL prices!

- TI486SLC 25MHz processor
- 640x480 VGA display with 64 gray scales
- 2MB RAM, expandable to 6MB
- 60MB or 80MB hard disk drive
- Pre-installed Windows™ 3.1 and MS-DOS® 5.0
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Ethernet Software Kit	70
2Mbps Software Kit	70
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AE-1/T 8 Bit 10BASE-T Adapter	140
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LANtastic/AI (up to 300 user)	1650
LANtastic /AI Expansion (5 users to 300)	1250
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continued from page 22

MICROTIMES STOCK INDEX HITS NEW RECORD HIGH

Once again, the Microtimes Stock Index bullied its way to record highs during the month-long trading period ended March 4.

Aided by reports that the economy grew a robust 4.8% in the fourth quarter of 1992, stocks in our sector notched impressive gains last period. For the full, month-long trading session, the Microtimes Stock Index rallied 44.39 points, or 1.09%, to a new record high of 4127.80. Conversely, the Dow Jones Industrial Average fell 43.23 points, or 1.26%, before closing at 3398.91.

In comparison, investors adjusted the NASDAQ Composite Index downward by 2.89% for the 30-day trading session, while the S&P 500 slipped .35% to 447.34. Among computing stocks in the news: IBM rallied to a close of $54.88. For the month, IBM rose $2.88 a share, or 5.53%. The troubled computer maker announced that it will cut its payroll in Hudson Valley, NY, by a least six thousand jobs, up from the company's earlier estimates of approximately three thousand jobs.

Analysts were impressed with Digital Equipment after a briefing with Chairman Bob Palmer last month. The analysts said Digital impressed them with its plan to introduce a new generation of computers based on its RISC microchips. They were also pleased with the company's new management team and said Digital may be poised for a turn-around. For the period, Digital's stock sprinted ahead $4 a share, or 9.47%, before coming to a close of $46.25.

Sun Microsystems downticked 13 cents a share to $34.88. Investors were still disappointed regarding reports that the company would take a 10-cent-a-share charge against sec ond-quarter earnings as a result of settling securities class action suits. Sun had previously reported second-quarter earnings of 33 cents a share.

Intel led all stocks in the adjacent table on a dollar-gained basis as that stock soared $11.75 a share, or 10.99%. The company was able to catch a glimpse of its new 52-week high of $120, before slipping to a close of $118.63. Last month, the company approved plans to implement a 2-for-1 stock split. Separately, Alex Brown and Sons raised its investment rating for the firm to "strong buy" from "buy."

EXCH	COMPANY	TICKER SYMBOL	CLOSING PRICE 02/05/93	CLOSING PRICE 03/04/93	NET CHANGE IN MONTH	PERCENT CHANGE IN MONTH	P/E RATIO	ANNUAL DIVIDEND RATE	ANNUAL DIVIDEND YIELD	ANNUAL HIGH	ANNUAL LOW
	SOFTWARE										
OTC	Adobe	ADBE	41.63	44.00	2.38	5.71	23	0.32	0.73	56.50	25.25
OTC	Aldus	ALDC	16.75	19.00	2.25	13.43	41	0.00	0.00	30.00	10.25
OTC	Autodesk	ACAD	43.63	45.50	1.88	4.30	27	0.48	1.05	56.50	26.50
OTC	Borland	BORL	19.88	21.50	1.63	8.18	–	0.00	0.00	71.50	17.50
OTC	Informix	IFMX	38.25	34.50	–3.75	–9.80	20	0.00	0.00	42.00	12.13
OTC	Lotus	LOTS	24.25	26.13	1.88	7.73	14	0.00	0.00	38.75	14.75
OTC	Microsoft	MSFT	89.00	83.75	–5.25	–5.90	30	0.00	0.00	95.00	65.50
OTC	Novell	NOVL	30.00	29.13	–0.88	–2.92	33	0.00	0.00	33.50	22.50
OTC	Oracle	ORCL	32.00	33.25	1.25	3.91	54	0.00	0.00	36.38	12.00
OTC	Software Publishing	SPCO	12.50	13.13	0.63	5.00	–	0.00	0.00	26.25	6.75
OTC	Symantec	SYMC	12.88	9.75	–3.13	–24.27	–	0.00	0.00	48.75	5.88
	HARDWARE										
OTC	Apple	AAPL	57.25	55.00	–2.25	–3.93	13	0.48	0.87	65.25	41.50
OTC	AST Research	ASTA	17.50	14.50	–3.00	–17.14	8	0.00	0.00	24.25	11.25
NYS	Commodore (L)	CBU	5.50	5.38	–0.13	–2.27	–	0.00	0.00	16.25	5.25
NYS	Compaq	CPQ	48.13	45.00	–3.13	–6.49	17	0.00	0.00	58.50	22.25
NYS	Digital Equipment	DEC	42.25	46.25	4.00	9.47	–	0.00	0.00	60.50	30.38
OTC	Dell	DELL	39.25	30.25	–9.00	–22.93	14	0.00	0.00	49.88	15.00
NYS	Hewlett–Packard	HWP	68.50	75.88	7.38	10.77	23	0.80	1.05	85.00	50.25
NYS	IBM	IBM	52.00	54.88	2.88	5.53	–	2.16	3.94	100.38	45.88
NYS	Silicon Graphics	SGI	30.38	28.88	–1.50	–4.94	–	0.00	0.00	33.00	14.13
OTC	Sun Microsystems	SUNW	35.00	34.88	–0.13	–0.36	26	0.00	0.00	41.00	22.50
NYS	Xerox (H)	XRX	86.38	83.00	–3.38	–3.91	–	3.00	3.61	88.88	66.75
NYS	Tandy	TAN	28.00	25.75	–2.25	–8.04	12	0.60	2.33	32.13	22.25
	CPU'S										
NYS	Advanced Micro Devices (H)	AMD	19.63	22.63	3.00	15.29	9	0.00	0.00	22.63	7.38
OTC	Intel (H)	INTC	106.88	118.63	11.75	10.99	24	0.40	0.34	120.00	46.50
NYS	LSI Logic	LSI	10.50	11.75	1.25	11.90	–	0.00	0.00	12.25	4.88
NYS	Motorola	MOT	53.38	59.38	6.00	11.24	27	0.44	0.74	63.00	36.44
	COMMUNICATIONS										
NYS	AT&T (H)	T	53.50	57.25	3.75	7.01	20	1.32	2.31	57.25	37.50
NYS	BellSouth Corp. (H)	BLS	52.75	57.13	4.38	8.29	17	2.76	4.83	57.13	43.38
OTC	MCI	MCIC	39.88	41.50	1.63	4.08	19	0.10	0.24	43.38	29.50
NYS	Northern Telecom	NT	42.50	44.00	1.50	3.53	20	0.36	0.82	48.00	30.50
NYS	Pacific Telesis	PAC	46.63	47.25	0.63	1.34	16	2.16	4.57	47.25	36.88

KEY: NYS = NEW YORK ASE = AMERICAN OTC = OVER THE COUNTER
(H) = NEW HIGH REACHED IN PERIOD (L) = NEW LOW REACHED IN PERIOD

MARKET DIARY:

ADVANCES	19
DECLINES	13
UNCHANGED	0
NEW HIGHS	5
NEW LOWS	1

MOST ACTIVE ISSUES:

LARGEST DOLLAR GAINER	Intel	$	11.75
LARGEST DOLLAR LOSER	Dell	$	–9.00
LARGEST PERCENTAGE GAINER	Advanced Micro Devices	15.29	%
LARGEST PERCENTAGE LOSER	Symantec	–24.27	%

	CLOSE 02/05/93	CLOSE 03/04/93	NET CHANGE IN MONTH	PERCENT CHANGE IN MONTH
MICROTIMES STOCK INDEX	4083.40	4127.80	44.39	1.09
DOW JONES INDUSTRIAL AVERAGE	3442.14	3398.91	–43.23	–1.26
STANDARD & POOR'S 500 STOCK INDE	448.93	447.34	–1.59	–0.35
N.Y.S.E. COMPOSITE	247.60	246.53	–1.07	–0.43
NASDAQ COMPOSITE	700.98	680.73	–20.25	–2.89

CLOSING QUOTES FOR GRAPH:		
DATE	MICRO TIMES	DOW JONES
07/31/92	3367.19	3393.78
08/28/92	3198.48	3267.61
09/25/92	3313.28	3250.32
10/23/92	3536.03	3207.64
12/10/92	3825.83	3312.19
01/11/93	4020.09	3262.75
02/05/93	4083.40	3442.14
03/04/93	4127.80	3398.91

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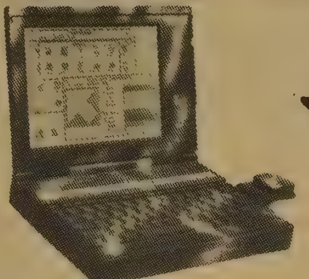

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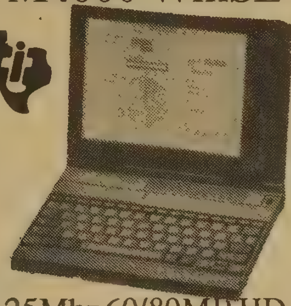
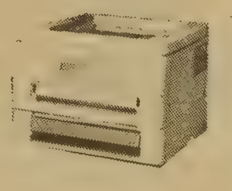
TI TM4000 WinSLC



- 80486-25Mhz 60/80MB HD
- 10" VGA 640 X 480
- 2/4MB RAM Exp. to 6MB
- DOS 50, Windows 3.1
- Travel Point Mouse,

486SLC performance
at 386SL prices $1699/$1899

TI MicroLaser



- PostScript Laser Printer
- RISC 8220 (Turbo)&68000
- PS17 9PPM $1099
- PS35 9PPM $1199
- PS35 Turbo 9PPM $1399
- AppleTalk for Mac $50

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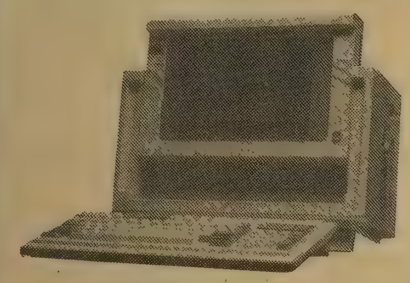

- 80386-40DLC
- 1MB Exp. to 32MB
- 2 or 3 expansion Slot
- 1.2MB w/FHDC (1.44MB optional)
- VGA 640 X 480 16 Gray Scale
- 2 Serial 1 Parallel
- 120MB Hard Disk
- One yearWarranty Parts & Labor

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486-33DLC NOTEBOOK

- 80486-33DLC
- 9" LCD VGA Display
- 4MB RAM Exp. to 20MB RAM
- 1.44MB FD,
- Built-in Hand Scanner Port.
- 1 Serial, 1Parallel, VGA Ext. Port.
- Buit-in Fax/Modem, Mouse port.
- One SCSI-2 Port, Keyboard Port
- One year Warranty Parts & Labor

$2259 130MB / **$2459** 210MB

486-50DX2 / 486-40DLC

- 80486-50DX2 / 80486-40DLC
- 9" LCD VGA Display
- 4MB RAM Exp. to 20MB RAM
- 1.44MB FD,
- Built-in Hand Scanner Port.
- 1 Serial, 1Parallel, VGA Ext. Port.
- Buit-in Fax/Modem, Mouse port.
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Satellite
T1850C

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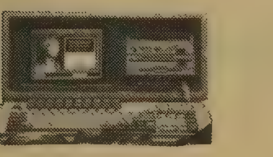
Color (Active)	**Call for Best Price**

386/486-33DX CRT Portable



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IBM/ValuePoint 433DX

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- 101 Enhenced Keyboard
- 120MB Hard Disk , 5 Exp. Slots
- SVGA(1024x768), Monitor : Optional
- OS2/windows, mouse
- One year on site Warranty

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McTEK 486-33/50DX

- 80486-33DX/ 486-50DX w/64K Cache
- 4MB Exp. to 32MB
- 7 Expansion , 2 Local Bus Slot
- 1.2MB Floppy Drive
- 2 Serial, 1Parallel
- 101 Enhanced Keyboard
- 120MB Hard Disk (17ms)
- Option : VGA card and monitor
- One year Warranty Parts & Labor

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McTEK 486-33/50 (EISA)

- 80486-33/50DX w/64K Cache
- 4MB Exp. to 32MB
- 8 Expansion Slot
- 1.2MB Floppy Drive
- 2 Serial, 1Parallel
- 101 Enhanced Keyboard
- 120MB Hard Disk (19ms)
- Option : VGA card and monitor
- One year Warranty Parts & Labor

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Citizen PN48	$299
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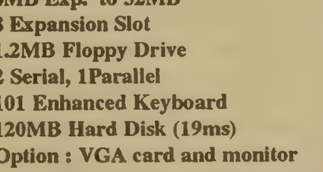

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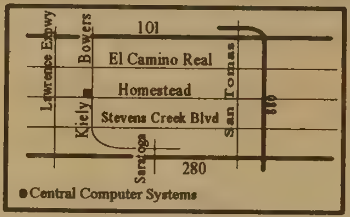

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with : Desktop Case, 1.44MB FD,
IDE Controller, Keyboard, Mouse,
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486-DX2-66	8MB, 212MB HD	2439
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	8MB, 120MB HD	1585
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	8MB, 80MB HD	1180
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Maxtor 130 MB HD, IDE Controller, 2S 1P
Mid Tower Case w. 220W
Mitsumi 101 Keyboard
EMC 1430 monitor 14" 1024x768 .28 NI
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MS Serial Mouse
MS DOS 5.0 & WIN 3.1

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MICRONICS COMPUTERS INC.

4 MB, TEAC 1.2 FD
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Baby AT Case w/ 200W
Mitsumi 101 Keyboard
MS Serial Mouse
MS DOS 5.0 & Windows 3.1

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486-50 ISA 256K cache	1495
486-33 EISA 256K cache	1525
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386-33 Gemini 64K cache	855
386SX-20 Gemini	675

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4 MB, TEAC 1.2 MB FD
IDE Controller, 2S 1P
Baby AT Case w. 200W
Mitsumi 101 Keyboard
MS DOS 5.0 & WIN 3.1
MS Serial Mouse

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486-50 EISA 256K cache VLB	1485
486-33 ISA VLB 256K cache	1095

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Pro Movie Spectrum	325
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CDR-74 CD ROM 280ms, 300KB/s, Ext	599
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CDU 7211 380ms Ext (w. controller)	555(635)
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DM-3024 265ms, Int / w. Kit	375/445
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4 Floppies w. IDE controller for AT	45
COREL SCSI software	75
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sIDE-2 (2 IDE HD only)	26
sIDE-3 (2 FD & 2 IDE HD)	29
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ADAPTEC	
1522K SCSI w. Kit (3MB/s)	159
1542C SCSI w. Kit (10MB/s)	259
1542C Plus w. ASW 500	325
1640 SCSI w. Kit for MCA	335
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ASW-1410 ASPI MS-DOS Manager v3.0	69
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7287 1:1 RLL	73
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TMC 1660 for AT (H only) controller	139
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DCE 376 EISA SCSI w.4MB cache	725
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538B IDE controller 2HD & 2FD for AT	45
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VESA LBus IDE (2HD,2FD) w. AT I/O	79
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CP-3000 40MB 25ms IDE 3.5", 1" ht	139
CP-30104 120MB 19ms IDE 3.5", 1" ht	205
CP30174E 170MB 18ms IDE 3.5", 1" ht	239
CP-30204 200MB 12ms IDE 256K 1" ht	309
CP-30254 250MB 14ms IDE 64K 1" ht	325
CP-3544 544MB 12ms IDE	875
FUJITSU (5 years warranty by manufacturer)	
2624FA 525MB 12ms SCSI-1&2	835
2266FA 1.2GB 15ms SCSI 5.25" full	1195
M2652S 2.0GB 11ms SCSI 5.25" full	2095
MAXTOR	
MXT-7120A 130MB 15ms IDE 3.5"	205
MXT-7213A 213MB 15ms IDE 3.5", 1" ht	279
LXT 340A 340MB 13ms IDE 3.5"	545
LXT 535A 535MB 13ms IDE 3.5"	889
LXT 7120S 130MB 15ms SCSI	249
LXT 7213S 200MB 15ms SCSI 3.5"	335
LXT 340S 340MB 13ms SCSI	575
LXT 535S 535MB 13ms SCSI	915
PO-12 1.2GB 13ms SCSI	1195
PI-17S 1.7GB 13ms SCSI	1445
Optical Drives :	
- Rewritable 1 GB 35ms SCSI Ext Tahiti II / 1 GB Cartridge Glass	2725/199
MICRO SOLUTIONS (External Hard Drive)	
40MB / 100MB (use printer port)	345/455
QUANTUM	
EIS 127AT 127MB 17ms IDE 32K cache	225
EIS 170AT 170MB 17ms IDE	249
LPS-240AT 244MB 16ms IDE 256K cahce	335
LPS-240S 244MB 16ms SCSI 256K cache	355
PRO-1225S 1.2GB 9ms SCSI 1.2M cache	1479
SYSGEN (External Hard Drive)	
124MB (printer port)	489
TEAC	
SD 3105 105MB 19ms IDE 1"ht	175

FLOPPY DRIVES

SYQUEST	
SQ44I 44MB Int	289
SQ44e 44MB Ext w. controll & cartridge	499
SQ400 44MB / SQ800 88MB cartridge	75/99
SYSGEN (External Floppy Drive)	
Portable Easy Floppy 3.5"/ 5.25" - for laptop & PC 1.2 (printer port)	159
TEAC (Floppy Drive)	
1.2MB 5.25" / 1.44MB w. frame	55/53
2.8MB 3.5" w. frame	95
Dual Floppy Drive 1.2MB & 1.44MB	139

6 I/O CARDS

KOUWELL	
2S 1P 1G w.NS16550AFN chipset (XT, AT)	55
4 Serial ports card / AT I/O (2S 2P)	79/33
AT I/O (2S 1P) / AT I/O (2S 1P 1G)	27/27
AT I/O w. IDE (2S 1P 1G)	34
Printer card / Serial card (XT, AT)	15/15
QUICKPATH	
13 port I/O w. 4-16550UARTS (2 IDE, 4F, 4S, 2P, 1G)	115
STB 4-COM	
4 serial, 16 bit, w.16554, support COM 1-8, IRQ 2,3,4,5,10,11,12,15	109

7 KEYBOARDS

FOCUS	
FK2001 101 click	42
FK8000 111 w. calculator	45
FK9000 129 keys Programmable	72
NORTHGATE OMNI	
101S /101NI / 102	55/69/69
Ultra T or F	95
SIIG (click)	
Suntouch Jr. 84-key mini keyboard	49
Suntouch 101	53
OTHERS	
BTC 84-key mini keyboard	39
KEYTRONIC 101	39
MAXI 101 / MITSUMI 101	35/35
Monterey 101	30

8 MATH CO-PRO, CPU

CYRIX	
83D87 - 25 / 33 / 40	85/85/99
Cx486 DLC	175
INTEL	
INTEL OverDrive Processor 486 SX16 / 20	395
- 486 SX25 / DX25	495
- 486 SX33 / DX33	659
INTEL 387DX Math Co Processor	89
Cooling Fan (heat sink)	22.95
INTEL CPU 386 DX25 / DX33	85
AMD CPU 386 DX40	85
INTEL CPU 486 DX33 / DX50	340/480
INTEL CPU 486 DX2-50 / DX2-66	450/580

9 MEMORY CARDS

ACCULOGIC	
RAMpAT! up to 16MB(SIMM),16 bit, AT	99
SIMM-ply Ram 8/16 bit, 8MB max, XT, AT	145
SIMM-ply Ram 16 bit, 8MB max, PS/2-50,60	169
SIMM-ply Ram 32 bit, 8MB max, PS/2-70,80	179
EVEREX (0K on board)	
Ram 10000 up to 10MB, EMS, AT	125
INTEL	
Above Board w. 512K (special)	159

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10 MEMORY CHIPS

DRAM

1 MB x 1 - 80 ns	3.99
256K - 80 ns / 64K - 100ns	1.39
256K x 4 - 80 ns / 64K x 4 - 80 ns	4.29/1.65

SIMM

16 MB x 9 - 70 ns	670
4 MB x 9 - 60 / 70 ns	170/150
1 MB x 9 - 60 / 70 ns	36/34
256K x 9 - 70 ns	11
1 MB x 36 - 60 / 70 ns	160/150
4 MB x 36 - 70 ns	580
SIMM Mac : 1 MB x 8 - 80 ns	35
SIMM Mac : 4 MB x 8 - 70 / 80 ns	135/125

SIPP

1 MB x 9 - 70 ns (3 chips)	35

KINGSTON MEMORY for

Apple, AST, AT&T, Compaq, IBM, Nec, Sun	call

LASER PRINTER MEMORY UPGRADE

Jet Ram (3rd Party):

EPSON - EPL 6000 2MB/ 4MB	129/199
HP Deskjet 500/500C 256K	69
HP Laser Jet IIP+/ III/ IIIP/ IIID	
- 1MB/ 2MB/ 3MB/ 4MB	75/115/155/195
HP Laser Jet II/ IID 1MB/ 2MB/ 4MB	95/135/205
PANASONIC -	
KX-P4410/ 4430 1MB/ 2MB/ 4MB	105/139/215
KX-P4420/ 4450i 1MB/ 2MB/ 4MB	99/139/209
KX-P4450 1MB / KX-P4455 2MB	139/159
QMS -	
P-S 410 1MB/ 2MB/ 4MB	99/139/209
P-S 815/ 825 2MB/ 4MB	159/229
TEXAS INSTRUMENTS	
TI Micro Laser 1MB	69

PACIFIC DATA:

Pacific 4 Memory for HP IIP+/ IIIP/ III/ IIID	
- 1MB/ 2MB/ 4MB	89/129/209
1-2-4 Plus for HP II/ IID	
- 1MB/ 2MB/ 4MB	115/155/235
Pacific 4 SIMM for HP 4/ IIISi/ XL300	
- 4MB/ 8MB	179/329
Pacific T Memory for Epson 6000	
- 2MB/ 4MB	209/299

11 MODEMS & FAX

ASAP TF-333 Phone & Fax Auto Switching	89
National Semi TyIN 2000 Answer/Fax/Modem	195
Micc Global Pocket Fax Modem, Tripple 96	159

Adtech Micro Systems (DOS & WIN)

Data Fax 9624Vi, MNP5	99
Hi - Per 96/144, MNP5	199

E-Tech

Bullet Modem 9696 MNP5 Int/Ext	225/255
Ufomate Pocket Fax Modem (w. Win/DOS s/w)	
- P1496MX / P9696MX (special)	305/259

EVEREX

Evercom 9600 v.42, MNP5 Int	295

FRECOM

Fax 96 w. 1 Liner & Far Fetch Fax	125
Fax 96 & modem for DOS	109
Fax 96 w. 1L&FFF & modem for DOS	159

HAYES

Optima 96 v.42, MNP 5 Ext	349
Optima 96 Ext + Fax 96	375
Optima 144 Ext + Fax 144	465
Pocket edition 2400 w. Smartcom EZ	129
Smart Modem 2400 Ext w. Smartcom EZ.	265
Ultra 96 v.42, MNP5 Ext	565
Ultra 144 v.32,v.42, MNP5 Ext	625
V-series SmartModem 9600 v.42, MNP5 Ext	499
Smart Com Exec/ WIN/Smart Com III	75/109/119

INTEL

14400 EX v.32,v.42,MNP5 Ext	465
Faxability Plus/OCR for WIN trade-up	115
SatisFaxtion Modem (w. FAXability s/w)	
- 100 Int send96 rec.48, 2400 modem	95
- 200 Int 96/24 v.42, MNP5	295
- 300 Int 96/144 v.42 (no scan port)	315
- 400 Int 96/144 v.42, MNP5	395
- 400e Ext 96/14.4, 4K data buffer	435

PRACTICAL PERIPHERALS

PM14400FX96 Int/ PM14400FX96SA Ext	369/409

US ROBOTICS

Courier 144 v.32,v.42, MNP5 Int	445
Courier 144 v.32,v.42, MNP5 Ext	459
Courier 144 w. Fax Ext	479
Courier HST-DS 144 v.32,v.42, MNP5 Ext	775
Sportster 2400 w. Sierra Game Int/Ext	99/109
Sportster 96 Modem MNP5 Int/Ext.	169/189
Sportster 9696 FAX MNP5 Int/Ext	179/199
Sportster 14.4 MNP5 Int/Ext	189/209
Sportster 96/14.4 FAX MNP5 Int/Ext	199/219
Shared Access Modem Sharing Kit	675

ZOLTRIX

2400 baud modem w. MNP5 Int	49
96/24 send & rec. fax/modem w. MNP5 Int	75
96/24 fax/modem v.42, MNP5 Int	105
14.4 fax /14.4 modem Int.	229
Pocket send & rec. fax/modem Ext	139

ZOOM

Send 96 Rec. 48 modem 2400 Int/Ext	79/95
FC9624V Int / FX9624V Ext	135/155
96/96 fax modem MNP5 Int/Ext	215/245
144/144 fax modem Int/Ext	235/265

ZY-XEL

16.8 modem 14.4Fax w. WINs/w Int/Ext	345/349

12 MONITORS

9" VGA Mono paper white 640 x 480	135

SIIG

9" Mono paper white	115

STANDARD TECHNOLOGIES

400-M VGA 1024x768 Paper white, 110/220v	115

EMC

EM 1412 14" Mono amber, 90-260v	95
EM 1428 14" 1024x768 .28, 90-260v	279
EM 1430 14" 1024x768 .28 NI, 90-260v	315
EM 1439 14" 1024x768 .39	235

IBM PS/Value Point

6312 14" 1024x768 .28, NI	399
6314 14" .28, NI w. Digital Pro Control	515
6319 15" Flat 1024x768 .28, NI	639

MAG (Auto Switch Power Supply)

PMV1448 14" 1024x768 .28, NI	365
MX14S 14" 1280x1024 .26, Sony Trinitron	525
MX15F 15" Flat 1280x1024 .28, NI, MacII	585
MX17F 17" Flat 1280x1024 .26, NI, MacII	1075
VGA to Mac Adapter	25

MITSUBISHI

HL6955SETK 20" 1280x1024 .31, NI	1745
Diamond Pro(TFS 6705) 17" 1280x1024	
.26, NI,Trinitron, MacII, 100-240v	1095
BNC Cable	39

NANAO (100-240v)

F340iW 15" Full Flat screen,1024x768 .28	735
T560i 17" 1280x1024 .25, NI, MacII	1645
F550i 17" 1280x1024 .28, NI, Mac	1095
T660i 20" 1280x1024 .31, NI, Trin. , MacII	2595
F750i 21" 1280x1024 .31, NI, MacII	2195

NEC (120v)

3FGX 15" 1024x768 .28, Mac	599
4FG 15" Flat 1024x768 .28, NI, Mac	749
5FG 17" Flat 1280x1024 .28, NI, Mac	1345
6FG 21" Flat 1280x1024 .28, Mac	2395
NEC Monitor Lens (Anti-reflection, Anti-static)	
- for 4FG / 5FG / 6FG	74/115/185

PANASONIC (90-140v)

C1381i 14" SVGA 1024x768 .28, Int, MacII	325
C1395 14" 1024x768 .28, NI, MacII	435
C1991 20" 1024x768 .31, NI, MacII	1455

POWER II

3E 14" SVGA 1024x768 .28, Int, 90-264v	285

SAMSUNG

CSD5577 15" Flat 1024x768 .28,NI. (oem)	459/499
CSF7487 17" 1280x1024 .26, NI, 90/264v	955

SEIKO (90-132v)

CM1450 14" 1024x768 .25, NI	425
CM2050 20" 1024x768 .31, NI, Mac	1495

SONY

1304S 14" 1024x768 .25, NI, 120v	565
1604S 17" 1024x768 .25, NI, 100-240v	995
2036S 20" 1280x1024 .30, NI, MacII	2095

VIEWSONIC

ViewSonic 4e 14" 1024x768 .28, Int,110/220v	315
ViewSonic 5+ 14" 1024x768 .25, NI, MacII	515
ViewSonic 5e 14" 1024x768 .28, NI, MacII	415
ViewSonic 6e 14" 1024x768 .28, NI	355
ViewSonic 6FS 15" 1024x768 .28, NI,90/264v	575
ViewSonic 7 17" 1280x1024 .28, NI, MacII	995
ViewSonic 8 20" 1280x1024 .31, NI, MacII	1595

13 MOTHERBOARDS

386-33/386-40 w. 128K cache	210/214
486-33 w. 64K	475

AMI

Mark V 386-33 w. 64K / 256K cache	395/465
Super Voyager 486-33 256K / VLB	775/875
Super Voyager 486-50 256K VLB	1095
Super Voyager 486 DX2-66 VLB	1245
Enterprise II 486-50 EISA 128K	1175
Enterprise III 486-33 256K VLB EISA	995
Enterprise III 486-50 256K VLB EISA	1225
Enterprise III 486 DX2-66 256K VLB EISA	1345

GENOA

Express 486-50 w. 256K cache for Local Bus	
Color Bahn Multimedia VGA & Turbo	815

MICRONICS

386SX-20 Phoenix BIOS (32MB max)	175
386SX-25	235
386-33 64K cache Gemini (32MB max)	355
486-33 256K cache ISA	685
486-33 256K cache EISA E2	1025
486-50 256K cache ISA	995
486-50 256K cache EISA E2	1245
486-33 Local Bus w. 256K cache	835
486-DX2-50 Local Bus w. 256K cache	955
486-DX2-66 Local Bus w. 256K cache	1195
MiniBoard 486-33 256K cache ISA	675
MiniBoard 486-50 256K cache ISA	995
MiniBoard 486-DX2-50 256K ISA	885
MiniBoard 486-DX2-66 256K ISA	1065
MiniBoard 486-DX50 256K EISA E3	1195
MiniBoard 486-DX2-66 256K EISA E3	1285
4MB Piggy Back (up to 8MB)	299
16MB Memory Card	150

NICE

486-33 256K ISA VLB	585
486-50 256K Mini EISA VLB	815
486-50 256K cache EISA	945
486-50 256K cache EISA VLB	975
486-DX2-66 256K VLB	825
486-DX2-66 256K Mini EISA VLB	915

ORCHID

Superboard 486 (VLB for VGA & controller)	
- DX33/ DX2-66/ DX50 256K	635/635/805

QUICK-PATH

486-50 w. 64K cache, 15ns ISA	825

UMC

286-12	69

14 MOUSE

JOYSTICK : Warrior 5, Quick shot	14.50

APPOINT (special)

MousePen Pro / Thumbelina (portable)	49

GENIUS

GM-F302 mouse (3 button)	29

IMSI

PC Stylus (Mouse & Trackball for CAD)	39

KENSINGTON

Expert mouse serial,trackball/ Bus mouse	99/115

LOGITECH

Cordless /Dexxa Serial /First Serial	89/27/37
Fotoman Digital Camera for PC & PS/2	485
Mouseman Bus	64
Scanman 256 / w. OCR software	249/285
Scanman color - 16.8 million colors	565
Trackman Portable / Trackman Combo	99/79

MICROSOFT

Ball Point Mouse (portable)	119
Bus Mouse 400PPI / Serial Mouse 400PPI	85/59
Serial Mouse 400PPI w. PS/2 port	79
Serial Mouse 400PPI w. 9 to 25 pin adapter	79

MOUSE SYSTEMS

Omni Mouse (2 button)	25
PC Mouse III Serial (optical) / Mouse Pad	59/22
PC Trackball II	55
Pen Mate / Page Brush - color scanner	165/469
Serial Bus Card (9 IRQs)	29
The New Mouse 400CPI (3 button)	55
The White Mouse w. Power Panel	45

15 NETWORK

Dyan DL 2000 card	215
MAILMAN 2.0 (10-user for Novell NetWare)	350
SilverNet Software / Starter Kit	79/425

3COM

3C503 8 bit coax/ 3C503-TP ethernet	179/199
3C503-16 coax/ 3C503-16-TP Etherlink II	169/179
3C507 16 bit coax ethernet/ 5 pack	279/1250
3C507-TP 16 bit TP ethernet/ 5 pack	299/1450
3C509 Etherlink III coax/ 5 pack	139/625
3C509 Etherlink III TP/ 5 pack	145/650
3C579 Etherlink III EISA coax / TP	245/249
3C523B Etherlink/ MC for PS/2/ 5 pack.	289/1210
3C523B-TP TP for PS/2/ 5 pack	319/1435
3C621 Link Builder 10 BT (12 port)	745
3C623 Single port BNC Module	125

ARTISOFT (Lantastic)

AE-2 Ethernet starter Kit v4.1,10Mbps	459
AE-2 Ethernet starter Kit, WIN (special)	510(479)
AE-2 Ethernet adapter / for MCA	199/275
AE-3 Ethernet starter kitv4.1,10Mbps	535
AE-3 Ethernet starter kit v4.1, WIN	585
AE-3 Ethernet adapter	235
10BaseT starter kit v4.1(Pear Hub included)	595
2Mbps starter kit v4.1/ 2Mbps adaptor	355/145
AE-1/T 8bit 10Base-T adapter	135
AE-2/T 16bit 10Base-T adapter	210
64K RAM upgrade for AE-2, AE-3 adapter	45
AI software (individual node) v4.1	69
Articom (LAN modem sharing s/w)	239
Artiscribe System s/w / HW + s/w Kit	299/345
Central Station Connectivity Processor	399
Dial Up Connection	69
Ethernet software Kit (NOS) v4.1	79
Lantastic Z (2 stations) v4.1	89
Lantastic for Netware (Network O/S)	139
Lantastic for WIN software Kit	165
Lantastic for Mac s/w Kit / HW + s/w Kit	339/549
Lantastic Print Server Station Ware	69
Netware Print Server Station Ware	69
Network Eye (Remote Control Access)	129
Peer-Hub 10Base-T concentrator	270
Peer-Hub AUI Interface Kit	270
Remote Boot ROM for AE-2, AE-3 adapter	45
Sounding Board adapter Kit	72

CASTELLE

FaxPress (Network Fax Server)	
- Novell 1 line Ethernet coax	2595
- Novell 2 lines Token Ring 16/4Mbps	3225
JetPress (Network Print Server)	
- for HP II,IID,III,IIID, coax / TP	429
LANPress (Print Server) connects up to 4 printers	
- Ethernet Thick/Thin coax (1P 3S)	475
- Ethernet Thick/Thin coax (2P 2S)	625
- Ethernet 10BaseT (1P 3S) / (2S 2P)	475/635

CC:MAIL

cc:Mail DOS v4.0 / WIN platform	199/339
cc:Mail 10-user / 25-user pack	239/579
cc:Mail Gateway v3.21 / FAX v1.2	879/1350

COMPULAN

Ethernet

- 8 bit E100 coax (special)	69
- 8 bit ET500 TP ethernet	85
- 16 bit E200 coax	95
- 16 bit E210 coax & TP, BUS master	159
- 16 bit E300 coax dual-port shared mem.	129
- 16 bit ET600 TP ethernet	105
- 16 bit E650 coax & TP, surface mount	125
- 16 bit E200/2 coax for PS/2 MCA	145
- 16 bit E800/2 TP for PS/2 MCA	155
- 32 bit E911 Bus Master for EISA	315
- 32 bit E950 coax & TP, EISA Bus	259
- Boot Prom (for E100/ E200/ E300/ E600)	25
- Hub 8 port TP +1BNC +1 cascading	285
- 12 port TP +1BNC +1 AUI +1 cascading	495
- Pocket adapter for coax / TP ethernet	179

Arcnet

- 16 bit for XT/AT Star Topology	69
- 16 bit for XT/AT Bus / TP	79/79
- 16 bit "4-in-1" Turbo Star & Bus	
(w. NCR 90C98A ASIC)	99
- 4-port Arcnet Passive Hub	19
- 8-port Coax Stackable Active Hub	159
- Pocket adapter for Arcnet	135

Token ring

- T1000 16/4Mbps	349
- T1000/2 16/4 Mbps for MCA	379
- MAU 8-port Type 1 cable, DB9 shielded TP	329
- MAU 8-port Type 3 cable, RJ45 unshielded TP	279

FARALLON

PN381 PhoneNet w.Timbuktu for WIN	259

GATEWAY COMMUNICATION

G/Ethernet 16 coax / 16 TP / 32 bit	129/149/480

XIRCOM

PE2-10B2 Pocket Adapter ethernet coax	315
PE2-10BT Pocket Adapter ethernet 10BaseT	325
PT2-16B3 Pocket Token Ring 16/4Mbps	615

INTEL

EtherExpress Combo LAN card	155
EtherExpress Flash LAN Adapter (combo)	165
EtherExpress 16 coax/16 TP/5 pack	135/145/545
EtherExpress 16 MCA / 16 MCA TP	179/189
EtherExpress 32 EISA	559
12 port Hub EtherExpress ISA Adapter	565
12 port Hub EtherExpress EISA Adapter	645
LAN Protect 1.5 (virus protection)	685
LAN Sight 3.0 Netware Utility / Monitor	299
LANSpool s/w 386 NLM v3.5	425
NetPort II Thin /Thick Ethernet	519
NetPort II 10BaseT / Token Ring	529/759
NetSatisfaxtion V.2 (s/w for NOVELL)	955
RJ45 Harmonica	55
TokenExpress 16/4 ISA/ EISA/ MCA	535/685/535

NOVELL

NE1000 coax ethernet (special)	99
NE2000 plus coax ethernet / 5 pack	145/625
NE2000-TP plus TP ethernet / 5 pack	149/650
NE3200 Eagle coax EISA	675
NE3200 EXOS coax EISA	625
NTR 2000 Token Ring	435
Eagle NE10T 4 Port Hublet	225
EPROM for NE2000	35
EXOS NE10T-Hub, 8 Port (8 TP + 1 coax)	335
Netware Lite 1.1 + DR DOS 6.0	69
Netware 2.2	
- 5 / 10 / 50 / 100-user	489/1089/1995/2955
Netware 3.11	
- 5 / 10 / 20-user	599/1345/1885
- 50 / 100 / 250-user	2650/3859/6885

SMC (Western Digital)

Ethercard Plus Elite 8 bit coax	115
Ethernet Plus Elite 16 coax / 16 TP	139/145
Ethernet Plus Elite 6 pack 16 coax/16 TP	725/750
SMC 3016 16bit coax / 16bit TP	145/149
Ethercard Elite 16 combo (coax/10 BaseT)	175
Ethercard Plus/ A for PS/2 (16 bit MC)	219
Ethernet Elite 32 bit coax / TP	650/660
Netware Boot ROM for ethernet	34
8 Port Concentrator (8TP+1AUI)	339
12 Port Concentrator(12TP+2AUI+1BNC)	595

CABLES & ACCESSORIES

Twisted pair cable, TP 4-pair, PVC	
- 1000' / 500' / 200'	89/55/35
10 BASE-T Twisted pair cable, 1000'	165
RG58 cable, 1000'	109
Belden 8259, RG58, 1000'	165
Transceiver AUI ---> TP (coax to RJ45)	69
Transceiver AUI ---> BNC (thick to thin coax)	69

16 POWER SUPPLIES

AMERICAN POWER CONVERSION (UPS)

APC-400 Smart-UPS (286, 386 WS)	309
APC-600 Smart-UPS (386, 486 FS)	399
APC-900 Smart-UPS (386, 486, FS & WS)	639
APC-1250 Smart-UPS (multiple FS & WS)	799
APC-450 Back-UPS 286, ps/2, 386	235
APC-600 Back-UPS 286, 386 FS	285
APC-800 Back-UPS 800RT, 2-4ms, 15 mins	565
APC-750 On-Line UPS (286, 386, 486 FS)	1365
APC-1500 On-Line UPS (multiple servers)	2499
APC PowerChute Plus for Novell or UNIX	79
APC UPS Monitoring Board for NetWare	75
Power Doctor (DOS) I/F Kit for Smart-UPS	79

GENERAL

200W for XT / UL	48
200W / 230W for Baby AT	45
200W / 230W for Mid Tower	55
230W for AT	48
230W / 300W for Full Tower	59/89
550W 1200W for UPS	279/659

PC POWER COOLING

Standard 220 desktop / full tower	85
Silencer 270 - for slim, for baby & mid tower	165
- for AT desktop / full tower	175
Turbo-Cool 300 - for slim	165
- for desktop / full tower	185

Turbo-Cool 450 desktop / full tower	345
InnerSource 2210 UPS for full tower, Int, 95-132v, 220W DC, 100W AC, =550VA Ext UPS	345
Novell Netware Interface	
- for InnerSource 2210 UPS	55

TRIPP LITE

BC 500 Lan (UPS, 350W)	215
BC 900 Lan (UPS, 650W)	365
Omni 450 Lan (UPS 325W + Line Regulation)	295
Omni 600 Lan (UPS 425W + Line Regulation)	385
Omni 900 Lan (UPS 650W + Line Regulation)	545

17 PRINTERS

CANON

BJ-200	(after rebate 299)/349
BJ-300 desktop	359

CITIZEN

GSX 200 (9 pin) / GSX 130 (24 pin)	165/205
GSX 140 Plus (24 pin)	269
- Color Option for above printers	45
- Auto Sheet Feeder for GSX 140	109
GSX 145 (24 pin, 132 column)	355
- Color Option for GSX 145	65
GSX 230 Fonts & quiet	249
GSX 240 Scalable Fonts & quiet	295
PN48 notebook, 1ppm, 2lb, battery, case	325

MICROTEK

TrueLaser MTP-306 6ppm, 2MB, 35 fonts	1275

HP (HEWLETT PACKARD LaserJet w. toner)

Desk Jet 500 / 500C / 550C	389/499/699
Laser Jet HP IIP+ / HP4 / HP4M	769/1379/1949
Laser Jet HP IIIP / IIID / IIISi	925/2295/3395
HP Accessories:	
- Envelope Tray(15 envelopes) for III	69
- Envelope Tray for IIP, IIIP	79
- Envelope Feeder for IIID (special)	245
- Legal Tray for HP II, III	69
- Optinal 500 sheet Legal Letter A4 for HP4	279
- Lower Cassette w. letter tray IIP,IIIP	149
- Toner for HP II, III	79
- Toner for HP IIP, IIP+, IIIP	66

LASER MASTER

Win Printer 800 (Postscript)	1125
Win Printer XL600 11x17, 600x660PPI	3325
WinJet 800 Postscript for HP II,IID,III,IIID	495
WinJet 1200 Postscript for HP 4	799

PACIFIC DATA PRODUCTS

ProTracer Inkjet, A to C size output, 360dpi, i960RISC processor, 512K, 45dBA	1125
- Postscript emulation card	375
- HP-GL emulation Card	325
- Sheet Feeder I / II	115/105
- Ink Cartridges	19.50

PANASONIC

1123 /1124i / 1624	199/285/349
- Auto Sheet Feeder for 1124 KX-P36	120
2123 24 pin, 43.5dBA, color capability	239
2124i 24 pin, 43.5dBA, color capability	319
2624 24 pin, quiet printer, 46.5 dBA	375
2180 9 pin, 45 dBA, color capability	159
Color upgrade Kit KX-PCK11	49
Single bin cut sheet feeder KX-PT10	95
32K Buffer dot matrix printers KX-P43	65
Serial interface card PS-13	75
4410 Laser, 512K, 5ppm	625
- Corona KX-PCR3	45
- Developer KX-PDP4	105
- Drum KX-PDM4	89
- Extra cassette KX-PKC2	45
- Fuser unit KX-PFS5	105
- Optional second cassette KX-P495	135
- Toner KX-P453	35
- Fonts Card KX-P47x (for Lasers)	95
4430 Laser, 1 MB, 5ppm	885
- Accessories same as 4410	
4420 Accessories	
- Developer KX-PDP2	95
- Drum KX-PDM2	99
- Envelope Tray KX-P431	59
- Legal Tray KX-P425	45
- Ozone Filter KX-PFT2	26
- Toner KX-P451	39
4450 Accessories same as 4450i	
4450i Laser, 11ppm	1095
- Developer KX-PDP1	95
- Drum KX-PDM1	145
- Envelope Tray KX-P430	59
- Legal Tray KX-P420	45
- Ozone Filter KX-PFT1	29
- Toner KX-P450	35
4455 Postscript, 11ppm	1695
- others same as 4450i	

QMS (Adobe Postscript)

QMS-PS 410 4ppm, 2MB, 45 Fonts	1335
- Envelope / Legal / Letter Tray	69/69/69
- Lower Cassette w. Letter Tray	160
- Toner	95

SEIKO

Smart Label Printer Plus(IBM/APPLE) / Pro	149/245
Box of Label (2 rolls per box)	10.95

TEXAS INSTRUMENTS

MicroLaser Plus PS17 / PS35 9ppm	1155/1295
- Apple Talk Kit	99

Laser Printer Accessories:

COMPUTER PERIPHERAL

Jet Page (for HP II)	195

GENESIS

JetTray 250E, holds 250 #10 envelopes	469

IQ ENGINEERING

True Type Master Library	29
Super Cart. 2 for HP II, IID, IIP, IIP+, III, IIID	249
Super Cartridge 2 & 2LC	269
Super Cart. 3 Pro+ for HP III, IIID, IIIP, IIISi	249
Super Cart. 3 Creative Collection for III family	249
Desk Jet 500 / Desk Jet Plus Professional	99

PACIFIC DATA

25 In One! (for Deskjet 500)	99
25 In One! III	
- for HP II, IID, IIP, IIP+, III, Microtek	245
Complete Font Library for HP III, IIID, IIIP	255
Font Bank for all HP Laserjet (New) stores soft fonts, 0.75MB / 1.5MB	205/269
Headlines Cartridge for HP II, IID, IIP	185
Paicfic Connect XI	
- For HP II, IID, III, IIID :	
-- 5 port 256K / 1MB (4S, 1P)	319/389
-- 10 port 256K / 1MB (10S)	449/519
- For HP 4, IIISI, Paint Jet XL300 :	
-- 7 port 1MB / 4MB (6S, 1P)	449/649
-- 10 port 1MB / 4MB (10S)	519/719
Pacific Page & 2MB (Postscript for HP II)	389
Pacific Page II / XL (Postcript for HP II)	719
Pacific Page P.E.(HP IID,IIP,IIP+,III,IIID,IIIP)	279
Pacific Page P.E. & 2MB	405
Pacific Talk	179
Pacific Page PE XL (HP IIP, IIP+, III, IIID, IIIP) Postscript w. 2MB & accelerator board	719
Plotter in a Cartridge (HP II)	225
Plotter in a Cartridge P.E.	
- for HP IID, IIP, IIP+, III, IIID, IIIP	225

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18 SCANNER

TAMARACK ArtiScan Flatbed 24 bit color 256 gray levels, w. Picture Publisher LE3.0 & Recognita plus OCR or PhotoStyler Full 1.1, SCSI interface

- TTI 6000C / TTI 8000C	1145/1445
- Slide Scan Kit (transparency,slide,X-ray)	595

MICROTEK

Scan Maker IIXE w. PhotoStyler	1150

Hand scanners. . . see **Logitech** in section #14

E-TECH

4256G 256 gray scale (w.OCR)	129(149)
4200C 256/4096 color (w.OCR)	275(299)

19 TAPE BACKUP

COLORADO

DJ-10 (120MB) QIC-40 w. cable	148
DJ-20 (250MB) QIC-80 w. cable	205
- AB-11 Ext tape port	45
- Cable (2 Floppies & tape back up)	9
- FC-10 Controller	95
- KE-09 Ext Kit w/o controller	75
- TC-15 controller w. data compression	195
- Unix/ Xenix driver for DJ-10, 20	99
Trakker 250MB Ext (printer port)	405
Trakker 120MB Ext (printer port)	355

EVEREX

EV-811 8 bit adapter QIC-02 for XT,AT	99

HILITE (Archive s/w included)

California 250MB, 3.5", 1" ht.	185

IOMEGA

Tape 250MB insider, 3.5", 1"ht..	235

MICRO SOLUTION

120MB / 250MB Ext (printer port)	329/389

SUMMIT

SE250 250MB w. Central Point Backup	205

CASSETTES

3M, VERBATIM	call

20 VGA CARDS

Hauppauge Win/TV-02 (122 channel tuner)	450
- Adapter Cable / S-Video Kit	52/85
Prolab Video Master	185
SIIG Multimedia Video Grabber Plus	339

(All cards 1024x768 except as stated)

CGA / MGP card (Monographic w. Printer)	29
ET4000 Tseng Lab 1MB / VLB 1MB	99/165
Oak067 Super VGA 512K	52
Oak077 Super VGA 1MB	69

AMI

FastView EISA VGA Graphics 1MB	295

ATI

VGA Stereo 512K w. speakers	219
Wonder XL 24 1MB, Hi-color, w. mouse	159
Graphic Ultra 1MB (VRAM) w. mouse	269
Graphics Ultra Plus 2 (DRAM)	339
Graphics Ultra Plus 2 (DRAM) w. mouse	369
Graphics Ultra Pro 2MB (VRAM) ISA	435
Graphics Ultra Pro 2MB (VRAM) VLB	445
Graphics Vantage 1MB (DRAM) w. mouse	235

DIAMOND

SpeedStar 24X 1MB 16 million color	179
Stealth 1MB (VRAM) w. Sierra Hi-color	225
Stealth 24 1MB (DRAM),16 million color	179
Stealth 24 1MB (DRAM), VLB	189
Stealth Pro (VRAM)1MB / 2MB	269/369
Viper VLB	475

GENOA

7900 1MB, 16 million color, 24 bit	119

MYLEX

GLE911 1MB, 1280x1024, EISA	399
GXE020B 4MB (DRAM), 1280x1024, 2MB VRAM, TMS34020, Tiga/EISA	1039

NUMBER NINE (TI34020)

#9 GXe 1280 x 1024, 90Hz, S3-928 chip	
- for Level 10 / L11 / L12	399/559/699
GXI Lite L20 TIGA,WIN, 1280-16color	565
GXI Lite L21 CAD, WIN, 1280-16color	725
GXI Level 24 CAD, WIN, 1280x1024-256	1279
GXI TC-Level 29, 24 bit 1280x1024-265K color at 72Hz,4MB (VRAM) 1MB (DRAM)	1495

ORCHID

Fahrenheit VA/ VLB, w.voice annotation,24 bit	225
Fahrenheit VLB, VESA 1MB 24bit	175
Fahrenheit 1280 (DRAM) 1MB	169
Fahrenheit P9000 VLB	459
ProDesigner IIs 1MB, w. Hi-color	139
ProDesigner IIs,1MB, Hi-color for MCA	299

III SOFTWARE

ADOBE (special)

Illustrator 4.0 WIN/ upgrade competitive	359/185
Streamline for WIN	125
Plus Pack for Mac / WIN	99
Type Cartridge 1 / Type Cartridge 2	79
Type Align / Type Manager for WIN 2.0	59/67
Type Set 1/2/3 for WIN	65/65/109
Type Set: Overheads & Slides	75
Type Set: Spreadsheets & Graphs	75

AUTODESK

AutoSketch 3.0 / for WIN	125/179
Generic CADD 6.0	285
Graphic Impact / Instant Artist	95 /49
Home Series (Home/Landscape/Kitchen/Deck)	45
Multimedia Explorer	115

BORLAND

Brief 3.1 for DOS & OS/2	99
C++ Professional 3.1 for WIN	319
C++ 3.1 for WIN & Application Frameworks	485
dBase IV v1.5 for PC	439
ObjectVision 2.1 / ObjectVision Pro 2.1	102/335
Paradox 4.0 / for WIN (special)	499/125
Quattro Pro WINDOS / WIN/ 4.0 DOS	99
Screenery (Windows wallpaper, screen saver)	25
The World of C++ (Video Training Kit)	85
Turbo C++ for DOS / WIN	69/105
Turbo C++ Visual Edition for WIN (special)	79
Turbo Debugger & Tools 2.0	99
Turbo Pascal 7.0 / 1.5 for WIN	115/109

CENTRAL POINT

Backup 7.1 oem	15
Anti-Virus for DOS / for WINDOS	15/39
PC Tools 8 (w. Anti-Virus & Backup)	125

INTUIT

Quicken for DOS 6.0/ WIN 2.0/ MAC 3.0	45
Quicken Companion	17
QuickBook/ QuickPay (payroll)	87/39
QuickBook & QuickPay	110

LOTUS

Improv - 12 data dimentions (special)	99
1-2-3 for WIN (special)	299
1-2-3 Rel 3.1+ for DOS / Rel 3.4 single	385
1-2-3 for UNIX 1.1 single	499
Ami Pro 3.0 for WIN/ competitive upgrade	229/99
Lotus Organizer (special)	99
Freelance (special)	199
Smart Suite (123 win, Ami,Freelance, ccMail)	450

MICROGRAFX

Designer 3.1	355
Graphics Works for WIN	185
Windows Draw 3.0	99

MICROSOFT

C/C++ 7.0 w. SDK / upgrade	315/135
DOS 3.3 / 4.01 / 5.0(on sale)	29/19/45
ACCESS (special)	95
Entertainment Pack for WIN 1/ 2/ 3/ 4	28
Excel 4.0 for WIN / upgrade	299/125
Flight Simulator	39
FORTRAN 5.1 (special)	279(105)
Fox Pro 2.5 single DOS / WIN	315
Fox Pro 2.0 (6 pack)	555
Mail Remote Workstation	125
Microsoft Encarta (CD ROM)	255
Money for WIN 2.0 (special)	49(15)
Multimedia Development Kit (w. CD Rom)	299
Office for WIN 3.0(Excel, Word, Power Point, Mail)	469
PC Mail Server for DOS & WIN (10-user)	435
Power Point for WIN / upgrade	299/99
Profit for WIN	129
Project 3.0 for WIN / upgrade	419/145
Publisher for WIN	125
Quick Basic Compiler 4.5	129
Quick C for DOS / WIN	69/125
Quick C Compiler w. Quick Assembler	125
Software Development Kit (SDK)	305
Sound System for WIN (w.16 bit Audio card)	199
Sound Bits (Cartoons/ Hollywood/ Musical)	29
Test for WIN	249
True Type Font Pack 1/ Pack 2 (HP printers)	49
Video for WIN (CD & floppy)	129
Visual Basic 2.0 (WIN)	125
- Pro Tool Kit for Visual Basic 1.0	135
Visual Basic Professional Version (WIN)	315
- upgrade Visual Basic Professional (special)	99
Visual C++ (special)	129(99)
Visual C++ Professional (special)	319(249)
Windows 3.1/ Upgrade	65/49
Windows 3.1 Device Driver Development Kit	315
Windows for Workgroups	165
- Workgroups Add on (to WIN 3.1)	69
Windows for Workgroups Add on Starter Kit	385
- Workgroups Add on 1 User Kit	195
Word 5.5 (DOS) / for WIN	207/299
- Word for Windows upgrade	125
Works 3.0 (new) / for WIN	99/125
- Works competitive upgrade (WIN)	79

QUARTERDECK

DesqView 286/ DesqView 386 v2.4	69/125
DesqView / X	165
DesqView / X Network Manager (TCP/IP)	129
Qemm 386 v6.0 / Manifest / Qram	62/39/49

SANTA CRUZ OPERATIONS (SCO)

SCO C++	915
SCO ODT Dev.System 2.0 / tape	1475/1250
SCO ODT Personal System 2.0 / tape	1170/1086
SCO XENIX-NET 386 single server v1.3.0	675
UNIX 386 Dev Sys 3.2.4 C-Compiler & Dev Tools	899
UNIX 386 GT Oper Sys 3.2.4 Multiuser	899
XENIX 386 Dev Sys 2.3.1 C-Compiler& Dev Tools	599
XENIX 386 GT Oper Sys 2.3.4 Multiuser	650

SYMANTEC

Norton	
- Anti-Virus 2.1 (new) / Backup 1.2	79/85
- Desktop 2.0 for WIN / 2.2 for WIN	102/109
- Utilities 6.01	112
- Commander (special)	85
PC Anywhere 4.5 Remote and Host	115
Q & A	239
Time Line 5.0 / Lan Pack / for WIN	445/379/445

WORDPERFECT

DataPerfect / DrawPerfect	265
LetterPerfect 1.1 / PlanPerfect	95/235
WordPerfect 5.1 (DOS)	249
- upgrade for DOS	75
- competitive trade up 5.1 for DOS	105
WordPerfect 5.2 for WIN	259
- upgrade Kit to 5.2 for WIN	40
- upgrade to WIN 5.2 from DOS	79
- competitive trade up 5.2 for WIN	105
WP Executive/ Office 3.1/ Works	145/95/99
WordPerfect Presentations(w.Sound Blaster)	295

OTHERS

3-D Charts to go	49
ACT ! 2.1 / 2 user / for WIN	225/335/235
After Dark for WIN (screen saver)	27
ALDUS	
- Freehand 3.0 for WIN	379
- PageMaker 4.0 for WIN	469
- Persuasion 2.1 for WIN	325
- Photostyler 1.1 for WIN	515
Asymetrix Multimedia Make Your Point	65
Automap (road atlas) / for WIN	49/59
By Design for WIN	59
Body Works	39
CALERA Wordscan 1.1 / plus	182/425
Carbon Copy 6.1 Guest & Host / for Win	119/112
Clipper 5.2 / Check-It	479/85
Cooking Companion (Food Analyze)	48
Corel Draw 3.0 / upgrade	350/145
- Competitive upgrade (special)	225(175)
Da VINCE eMail 2.0 , 10 user (special)	485(295)
Dash Board for WIN (HP)	45
Direct Access 5.1 / for WIN (new)	59/45
DR DOS 6.0 + NetwareLite 1.1	69
Display Faces / Family Bible	77/25
Energizer Bunny (screen saver)	19
FaceLift for WordPerfect / for MS WIN	59
Fastback Plus 3.1 (special) / for WIN	89/117
Fax Grabbler 1.2 / Faxit DOS & WIN	72/69
File Maker Pro 2.0 for WIN	259
Font Minder for WIN	55
Frame Maker 3.0 / competitve upgrade	485/299
Full Motion Video MATINEE (screen saver)	32
Geoworks Pro	119
Grammatik V for DOS / WIN	57
Hardvard Graphics for WIN (oem)	375(279)
Hardvard Graphics 3.0 for DOS (oem)	399(299)
Hijaak 2.1 / for WIN / Hijaak PS	115/115/199
Hollywood for WIN (special)	199
LapLink Pro v4 / upgrade	99/49
More Fonts / MacPrint	77/85
My Product Invoice	49
OS/2 2.0 / upgrade (IBM)	139/99
PFS: First Choice	79
Pacioli 2000 (special)	15
PC Swimsuit Calendar (DOS screen saver)	29
Power Search (File Manager)	59
Prodigy Starter Kit 3.1	29
Procomm Plus 2.1 / for WIN	69/95
Professional Draw/ competitive upgrade	269/129
QA Plus 4.7 / for WIN	89
Quark X Press 3.1 for WIN	569
Right Writer 5.0 / for WIN	49
SpinRite III	79
Stacker Data Compression 3.0 / upgrade	95/55
Star Trek (WIN Screen saver)	37
Super PC-Kwik	59
Superstor Pro 2X / Superstor 2X	79/65
The Far Side (computer calendar)	29
Time Slip v.5.0	189
Turbo CAD v3.0 (design & drafting)	85
Ventura Publisher 4.1 (new)	485
- Ventura Publisher 3.0 + upgrade 4.0	399
- Ventura Publisher 4.1 Education special	199
Vista Pro / Wave for WIN	69/75
Winfax Pro 3.0 (new) / Will Builder	85/15
XEROX Rooms for WIN	64
XTree Gold 2.5 / XTree for WIN	89/65

Educational Software & Games ... on sale

RESOURCES

Guide to Restaurants and Bars **(Two volumes, $120 + shipping)**
Practitioners Publishing Co.
3200 Collinsworth St.
Fort Worth, TX 76107
1-800-323-8724

David Simon
Certified Public Accountant
Oakland, CA
(510)893-5753

Marc Halperin, Restaurant Consultant
Halperin Associates
Berkeley, CA
(510)841-3293

Inventory and Menu Management:

Eatec
Eatec Corp.
Berkeley, CA
(510)548-1810

Menu Manager 6.0
REMACS, Inc.
Redwood City, CA
(415)591-8600

Timekeeping Systems:

Time Clock Plus
Data Management Inc.
San Angelo, TX

Bar Control Systems:

Easybar
Beverage Control Systems, Inc.
Lake Oswego, OR

Wunder Bar
ABC Inc.
Vacaville, CA

Point-Of-Sale Systems:

CRS Inc.
Minneapolis, MN

Kingtron Corp.
San Ramon, CA
(510)820-0990

Seating and Reservations:

Intelli-Host Corp.
Roseville, CA
(916)791-7600

continued from page 74

strategies such as co-sale incentives.

•Server and tip. Necessary for tax reporting purposes. In addition, a pattern of abnormal tipping may be an indicator of the server's performance.

•Promotional, complimentary, and employee meals. Unless separately accounted for, analysis of costs as a percent of sales may be misleading.

•Detailed check information. Each item on the customer's bill is printed out on the receipt.

Capabilities of this sort have traditionally been fairly expensive. Today, a complete integrated point-of-sale system for a large restaurant can cost in excess of $50,000. But for a small-time operator, the hardware for a single expanded electronic register can typically be found for $1,500 to $3,000—about as much as a good desktop computer.

Larger operations typically have a greater need for integration, and the more complex systems are designed accordingly. For example, an order can be entered at the waiter's station, displayed in the kitchen, and eventually printed as the check and tracked to payment at the cash register.

The more sophisticated software prioritizes the food order according to cooking time, decides who should cook it, and, as with accounting for cars rolling down an assembly line, takes an egg out of its inventory account and tracks it from omelet to payment (surprisingly, no food service giant has yet integrated this data all the way to the chicken coop, where a serving of maternity feed could be scooped for the hen waiting to replenish the egg supply).

ALL IN THE TIMING

A task especially deserving of computer capabilities is staff scheduling. Based upon statistical experience, staff needs can be estimated as required for variables such as peak hours and days, holidays, or promotional campaigns. Staff, in turn, can be automatically scheduled according to their prestated availability. Once a schedule has been designed, each employee can receive a printout of his or her personal schedule, reducing the likelihood of confusion and absences.

Some restaurants integrate their time clock into the accounting system. Sophisticated scheduling software will also generate reports of absenteeism and tardiness.

SECURITY AND CONTROL

Restaurants and bars are frequent targets of "inside" theft. The business is characterized by large numbers of cash transactions, and there is often limited separation of responsibilities among employees. A bartender, for example, may perform every aspect of customer service, including the collection of cash payments. To control theft, both cash and inventory should be monitored and the information analyzed regularly.

Halperin, the restaurant consultant, agrees: "If you have a good handle on food costs and sales, then by looking at irregularities you can often identify such occurrences as theft of supplies, 'skimming,' or unnecessary waste."

He sees a firm grasp of food cost as the key to controlling overall costs, and notes that this is done most efficiently through standardized recipes, using software that ties recipe writing into inventory. For example, "If tomatoes are costing you 'X' per ounce, wine is so-much a cup, and garlic costs 'Y' for a tablespoon, the kitchen can produce tomato sauce and know how much it will cost per half cup atop a serving of pasta."

The choice of software, again, is a matter of personal taste and staff aptitude. "Some very simplistic programs are out there," says Mr. Halperin, "As well as extremely elegant, complex programs." As examples of midrange and high-end packages, respectively, he mentions Recipe Writer Pro and Eatec.

In many cases, it may not be possible for a manual (i.e., strictly human) system to attain the same degree of control that can be achieved electronically. For example, control systems are available for keg beer which measure each drink and the total amount of draft beer sold.

A number of systems are available to computerize and control the bar, right down to electronically metered spouts. However, as Mr. Halperin explains, "Bartenders like to make a show of drink preparation, and patrons expect to see their drinks freepoured. It lets them feel that they're getting special treatment. After all, who's paying for the drinks—your customer or your accountant?"

INGREDIENTS FOR UNCLE SAM

As in any business, another important aspect of the accounting system is to facilitate governmental reporting requirements, especially tax. Special software features to look for include the ability to prepare reports analyzing employee tips, hours worked, and approaching overtime. All are needed for compliance with tax or wage statutes.

The Federal Labor Standards Act (FLSA), which specifies the federal minimum wage and required overtime pay, is relevant to those restaurants which are subject to these rules because many food service employees are paid only minimum wage. The FLSA permits employers to reduce the minimum wage they must pay by taking into account a "credit" recognizing customer tips.

The IRS requires employees to report all their cash tips to the employer. The restaurant, in turn, must report that tip income. To encourage compliance, IRS regulations require large food and beverage establishments to allocate a specified minimum amount of tips among tipped employees. The IRS can hold the restaurant responsible for its share of FICA taxes on any tips it later discovers underreported by an employee.

A system that collects tip information as it is produced will obviously facilitate an establishment's tax reporting.

INVENTORY ACCOUNTING

For tax purposes, the IRS does not consider an egg to be property acquired for resale to customers in the ordinary course of business. Instead, that egg is considered raw material used in the production of a finished product—the omelet.

As such, restaurants are generally subject to complex inventory rules, known as the Uniform Capitalization Rules, applying to manufacturers.

Under these rules, restaurants must allocate certain overhead costs to inventory, for example, storage, purchase, and handling costs. Since these costs are included in year-end inventory, their tax deduction is deferred until the inventory is sold.

Many high-end accounting packages have the ability to take on some of the burden of these calculations by allocating overhead costs to inventory and tracking these costs through the inventory cycle. This requires, however, that the software be programmed to do the allocation. Even with specialized software this undertaking can be time-consuming and expensive.

Tax practitioners have taken a variety of approaches to lessen the compliance burden.

One approach, as offered in the Guide to **Restaurants and Bars**, suggests using the Simplified Production Method as a shortcut to demonstrate a good faith effort to comply with the Rules. The Guide provides an indirect cost allocation worksheet to calculate the indirect cost component required to be inventoried. As the Guide explains, establishments wishing to use this method must file an election with the IRS and gain their consent.

If your restaurant intends to use this approach, review your chart of accounts and procedures to assure that your computerized accounting system generates the information called for on the worksheet.

The Resources list accompanying this article offers only a small sampling of accounting and operations systems for restaurants and bars. It's by no means a complete menu of what's available, and is intended only to provide examples of some of the features mentioned. The next food service trade show may be fruitful ground for exploration. ■

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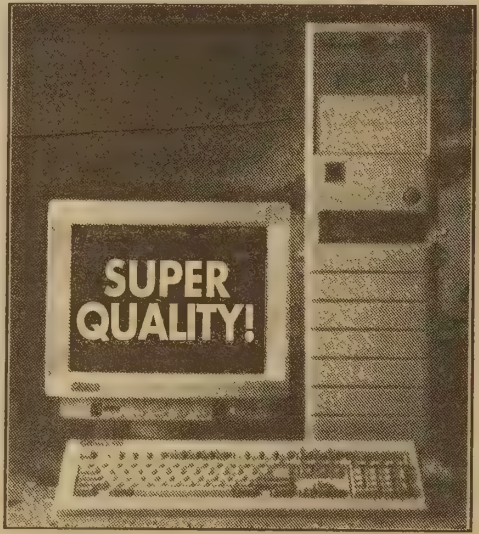

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- Automatically DELAY re-boot your computer when line returns to normal.
- Its electronic surge protection will never burn out.
- Adjustable current, quick response electronic circuit breaker turns computer off to prevent extensive damage from excessive current.
- Touch control, 1200 Watt output, and large toroid EMI and RFI filters (Patent Pending)

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486DX-33 MHz EISA
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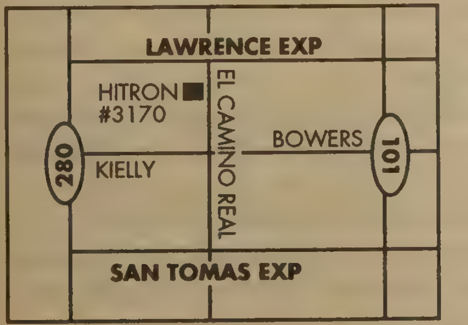

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continued from page 94

THE HOBGOBLIN OF LITTLE MINDS?

This consistency can mean serious problems for Windows users, however. Even veteran Windows desktop publishers will be confronted with a completely nonstandard Windows front end for this program.

In FrameMaker, very few dialog boxes provide the standard Save, Cancel, and Use buttons most other packages employ. The FrameMaker toolbox and a Paragraph Catalog palette (FrameMaker's counterpart for a style sheet) are virtually the only facets of the program capable of speeding up the process of page layout and document design. It's especially painful to execute things such as paragraph formats with special leading and margin specifications, or to add new style formats to your paragraph catalog. These are fairly opaque processes whose methods are not obvious to experienced users of other programs, and are apt to be forgotten.

You also can't drag-and-drop a FrameMaker project into a Program Manager group as an icon for fast opening when you start the program. To be fair, Ventura Publisher (its immediate competitor) and Quark for Windows also fail to fulfill this need.

In short, FrameMaker's learning curve is very *steep.*

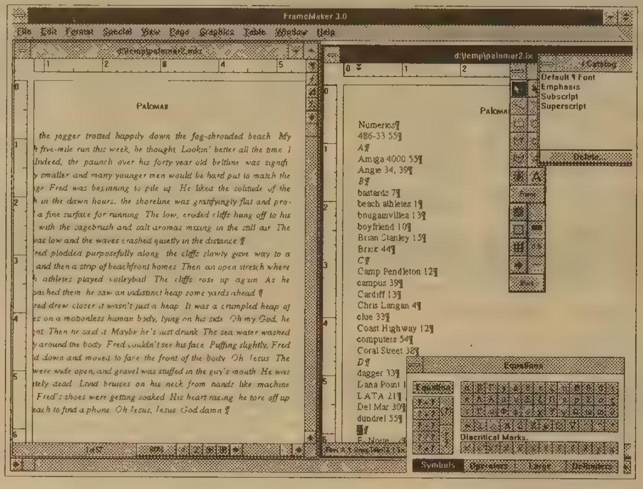
It's also hyperbolic to claim FrameMaker as the all-in-one application that can fill the needs of any office. As a word processor, the program does offer a nice Find and Change function, plus a solid and simple spell checker. Many basic text modification procedures are accessible through dialog boxes with a couple of keystroke combinations. For most basic word processor functions, FrameMaker is adequate but not spectacular.

I ran into problems importing Word for Windows text, with mismatched font sizes and irregular paragraph margins. FrameMaker's OLE implementation is also minimal. You can execute a Paste Special with graphics and sound objects, but not with word processor files!

You also can't wrap text around graphics without the remarkably arduous procedure of assigning a text frame to every line to be wrapped, and then stretching the frame to fit around the graphic. You may need to adjust dozens of lines this way. Because of this, FrameMaker is no threat to PageMaker, Quark, or even Ventura as a pure page layout program—in fact, as I see it, FrameMaker is virtually in its own market segment, as a dedicated long document creation program for power tech writers. Ventura, as we'll see later, has many more capabilities as a page layout program (and, in its current version, implements those capabilities in a much friendlier way) than FrameMaker, but also competes head-on in the long-document creation field.

DON'T LET THE INTERFACE STOP YOU

With these caveats duly noted, let's take a look at some of the extremely powerful capabilities FrameMaker has to offer. For its specific mission, FrameMaker has some of the most effective tools I've ever seen.



PALOMAR

the jogger trotted happily down the fog-shrouded beach My
h five-mile run this week, he thought Lookin' better all the time I
Indeed, the paunch over his forty-year old beltline was signif
y smaller and many younger men would be hard put to match the
ge Fred was beginning to pile up He liked the solitude of the
h in the dawn hours. the shoreline was gratifyingly flat and pro-
a fine surface for running The low, eroded cliffs hung off to his
with the sagebrush and salt aromas mixing in the still air The
vas low and the waves crashed quietly in the distance ¶
red plodded purposefully along the cliffs slowly gave way to a
and then a strip of beachfront homes Then an open stretch where
h athletes played volleyball The cliffs rose up again As he
pached them he saw an indistinct heap some yards ahead ¶
red drew closer it wasn't just a heap It was a crumpled heap of
es on a motionless human body, lying on his side Oh my God, he
nt Then he said it Maybe he's just drunk The sea water washed
y around the body Fred couldn't see his face Puffing slightly, Fred
d down and moved to face the front of the body Oh Jesus The
were wide open, and gravel was stuffed in the guy's mouth He was
tely dead Livid bruises on his neck from hands like machine
Fred's shoes were getting soaked His heart racing he tore off up
each to find a phone Oh Jesus, Jesus God damn ¶

PALOMA

Numerics¶
486-33 55¶
A¶
Amiga 4000 55¶
Angie 34, 39¶
B¶
bastards 7¶
beach athletes 1¶
bougainvillea 13¶
boyfriend 10¶
Brian Stanley 15¶
Brick 44¶
C¶
Camp Pendleton 12¶
campus 39¶
Cardiff 13¶
Chris Langan 4¶
clue 33¶
Coast Highway 12¶
computers 54¶
Coral Street 38¶
D¶
dagger 33¶
Dana Point 1
LATA 21¶
Del Mar 30¶
dundrel 55¶
E¶

For example, indexing has long been a vexing problem for even the most powerful applications. Even the best word processors, such as Word Perfect and Microsoft Word, bedevil their users with arcane methodologies for marking and generating indices—not to mention programs such as PageMaker, which takes a good stab at indexing but falls woefully short in areas such as page numbering, page ranges, and proper indexing of numeric entries. Indexing is so difficult in the PC world that it's even hard to explain the concept clearly.

FrameMaker has the fastest and most efficient manual indexing capability I've ever seen. When you decide to create an index, you must first mark each word or block of text you wish to include—as is true with virtually every other program on the market. Where FrameMaker shines is in its simplicity and efficiency. Enable the Marker dialog box and select Index when you're ready to do your text marking. A couple of mouse clicks and each entry's done. I generated an index for a 60-page book in a matter of minutes, with over a hundred entries (see illustration).

An index is treated just like any FrameMaker document, and can be formatted with style sheets (called, in FrameMaker as well as Ventura, "Tags"), and in any other fashion available. If you make substantial changes to your document, FrameMaker allows remarkable updating of an existing index associated with it. Simply ensure that your document is the active one and hit Generate. Your original index entries will be overwritten and updated—but all your formatting for non-index paragraphs such as titles and alphabetic headings will remain intact!

The subtleties of indexing—e.g. changing page number separators (from an en dash to a "-to-"), sorting according to the entire ASCII character set (with foreign language characters), and altering index entry marker text to accommodate pointers from one subject to another (such as "Lava, see Molten Magma")—don't escape this program. The last procedure in particular requires some work, but for serious indexing FrameMaker is supreme. It's a feature many reviewers have missed, and one of the most frequently avoided because of the complexities involved. FrameMaker is almost worth the price for this capability alone.

Another of FrameMaker's unusual features is Conditional Text, which allows the user to have multiple versions of the same document. Text which is present in one version of a document is conditionally tagged, setting it apart from the rest of the document, which is present in all versions. An example of such a document, aptly mentioned in other reviews of this product, is a school textbook comprising both student and instructor versions. Conditional text might be answers to homework questions at the end of each chapter, for example.

It's advisable to use spot color to help indicate conditional text (one of the better ways to use FrameMaker's very limited color capabilities). There are also some constraints. Don't insert any spaces between segments of conditional text, and also try to keep your tagged statements as short as possible. In this way, you can create multiple versions of one document without creating more than one actual file. It's like a very sophisticated form of Mail Merge on a word processor. You can create multiple versions of a resume without having a dozen inconvenient files to rummage through! In this way, FrameMaker is admittedly superior to a word processor. Graphics can also be conditional!

We don't have space to adequately discuss FrameMaker's substantial table features and its highly acclaimed equation editor, except to say that I've never seen so many mathematical symbols contained on a button bar, or accessible in such a logical way. Matrices, calculus symbols, Greek symbols, and diacritical marks, almost every conceivable type of relation, and many other mathematical layout symbols are available simply by selecting a math expression in your text and clicking a mouse button. Nothing I could do with my limited math knowledge could remotely push the capabilities of this feature.

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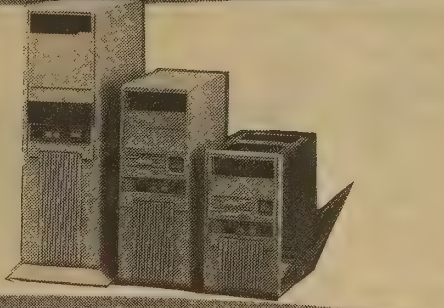

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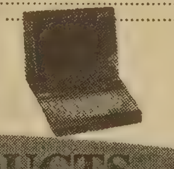

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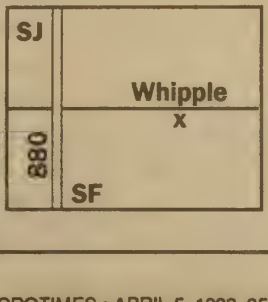


Again, I haven't been able to do justice to many of this program's capabilities. Those who are willing to struggle with FrameMaker's bare-bones, non-Windows-standard front end, recognize its limitations as a pure page layout program, and understand its real mission, will find this a remarkably powerful long-document program.

Ventura 4.1.1: The Latest Update

Speaking of which, let's take a long look at the great trailblazer of long-document DTP programs on the PC—Ventura Publisher. The current version has made some major changes in the user interface which substantially enhance the usability of the program.

However, as we've seen with FrameMaker, usability may not always be the point—utility may be much more important. Ventura's utility, in its latest version, is substantial, and, for many basic page layout tasks, it runs rings around FrameMaker, while closely approaching Frame in long-document power.

There are still numerous problems, both large and small, which I feel unfairly hamper Ventura in its competitive position. For example, a brand-new installation of Ventura can take over two minutes to start up. A solution for this is provided by Ventura, which is workable but irksome.

VENTURA'S WIDTH TABLES

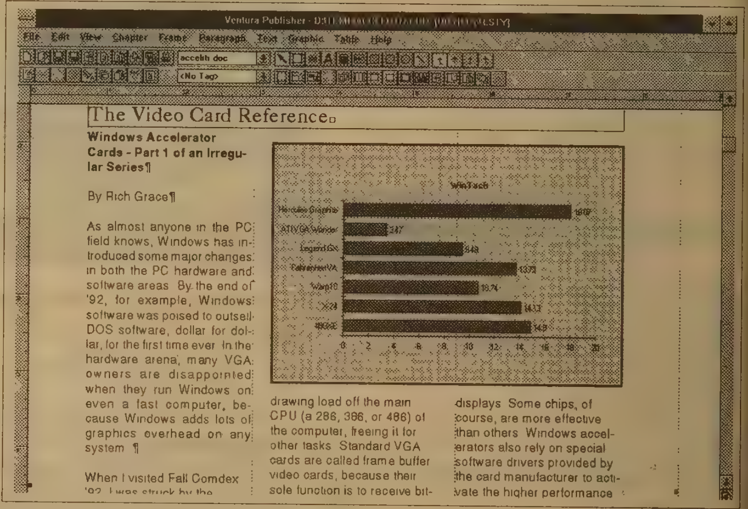
Ventura provides something called a Width Table, which places default typeface handling values in the various styles accompanying the program. Unfortunately, the default width table isn't adequate for users who have a sizeable font collection, and the program's startup slows dramatically as each style is loaded and initialized for all your fonts (at least, that's what I've managed to figure out). To fix this problem, the user must start the Manage Width Table feature under the File menu, create a new width table file, select each style sheet in turn and assign the new width table to each style, and save them out. It's a laborious process which, while fully documented and doable by any competent user, should be unnecessary. Once the process is done, Ventura loads much faster.

The key to understanding Ventura is its handling of Style Sheets, called "Tags." More than any other program, Ventura employs the technique of default designs for both documents and text paragraphs to speed design work. The new version of Ventura retains all the virtues of its previous versions, and provides a new and user-configurable button bar which automates many menu functions. In many cases (though not all) Ventura's new button bar enhances the use of the program. If you have the right tool selected, text attributes such as boldfacing, italicizing, subscripting, and superscripting can be changed with the click of a mouse.

As different original tool buttons (like Paragraph, Create Frame, and so on) are selected, different button functions will appear on the bar—while mirroring Ventura's method of disabling many menu functions if certain tools are not enabled. One aspect which may confuse users of previous versions is that if the button bar is enabled, you do not have access to the traditional Ventura toolbox; those tools are integrated onto the button bar!

This took some getting used to; it's a simple matter, however, to disable it and to run Ventura in its more conventional screen setup. Once you do so, your standard Tag window, from which you select your paragraph formats, will appear as normal, and tags can be selected by name. I sincerely wish Ventura would retain the display of the Tag list window while the button bar is enabled. It's much more convenient than scrutinizing buttons on a high-res screen.

One feature I've always appreciated about Ventura is its OLE support. It was one of the first major Windows apps to support this capability (in its very first Windows version!) and it supports all OLE client functions including the standard Paste Special, Paste Link, and Paste Embedded Object functions discussed earlier in this article. It works exceptionally well for all client operations, and demonstrates Ventura's commitment to the Windows platform.



The Video Card Reference

Windows Accelerator Cards - Part 1 of an Irregular Series¶

By Rich Grace¶

As almost anyone in the PC field knows, Windows has introduced some major changes in both the PC hardware and software areas. By the end of '92, for example, Windows software was poised to outsell DOS software, dollar for dollar, for the first time ever. In the hardware arena, many VGA owners are disappointed when they run Windows on even a fast computer, because Windows adds lots of graphics overhead on any system. ¶

When I visited Fall Comdex '92, I was struck by the

drawing load off the main CPU (a 286, 386, or 486) of the computer, freeing it for other tasks. Standard VGA cards are called frame buffer video cards, because their sole function is to receive bit-

displays. Some chips, of course, are more effective than others. Windows accelerators also rely on special software drivers provided by the card manufacturer to activate the higher performance

FRAMES—VENTURA'S ACE IN THE HOLE

After working with Ventura's frame handling capabilities combined with OLE, I've found that Ventura's handling of frames and their various specifications, while not as intuitive as the implementation in Quark XPress, is the most powerful in this software category. An entire menu is devoted to precise adjustments of text and picture frames (which, of course, is also available on the button bar). For example, Ventura's Sizing and Scaling feature enables the user to retain exact aspect ratios of any graphic, regardless of the size of the frame containing it. While you will probably need to experiment to get it right, once you do you can save the settings as a Tag (just like a paragraph format) and use them in any graphic frame!

You can also define borders around any frame, or attach top, bottom, or side borders. As with Quark, you can also define background colors for use in a frame (see illustration). The selection of colors offered in this feature is fairly limited—essentially, just the basic eight spot colors with various shadings. Once you've loaded a text file or picture, the filename is listed in the "File(s)" window, and can be loaded into the frame with a mouse click. In this way, you can freely experiment with layout elements in various frame positions.

Compared to FrameMaker, Ventura goes out of its way to make page layout work easy and productive. Text in a column is automatically wrapped around a frame in which you're going to place a graphic. Once you've selected a document template from the substantial collection provided by Ventura (and the collection is so extensive many users will never feel the need to create their own), text can be imported and is automatically flowed onto the frames and columns of the document, with additional pages added as needed.

Many basic functions in Ventura cannot be Undone: selecting text and using All Caps, Capitalize, or No Caps, even by mistake, means a substantial headache if you need to recover your previous work. Because of this, you need to be very careful before you use a feature in some situations. Often your only recourse is to Revert to the previously saved version of the document. It's not what an experienced user of other packages would look for, but it serves the same function as an Undo for some operations.

GALLOPING BUTTONITIS

Ventura provides an interesting utility to edit

continued on page 268

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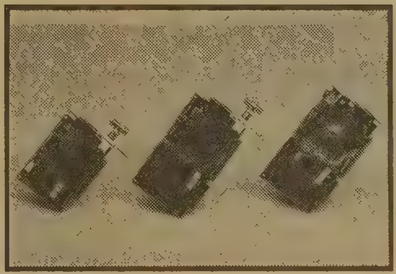

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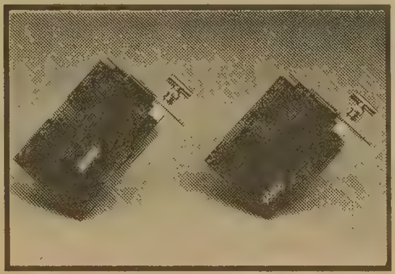

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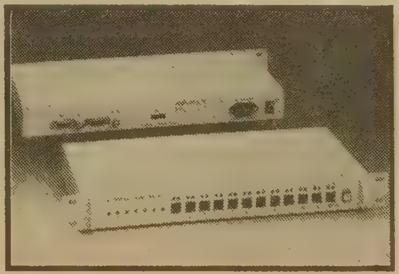

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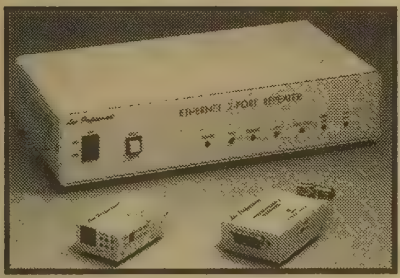

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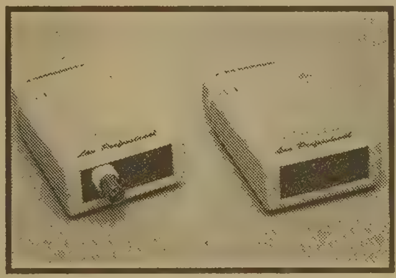

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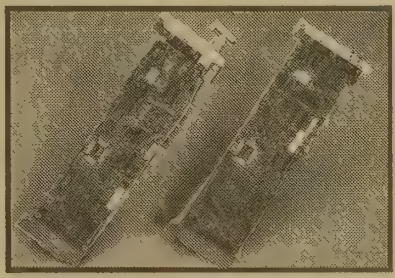

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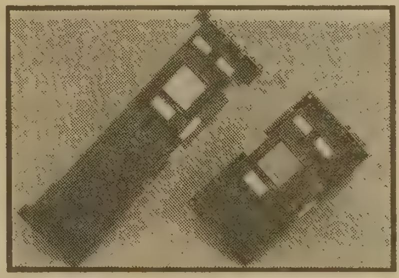

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- ○Promise DC-4030VL VESA LocalBus IDE 1MB Cache Controller
- ○Diamond Viper VLB Windows Accelerator 44M WinMarks
- ○KFC 15" 1280X1024NI Multisync, Digital Controlled, Flat-Screen
- ○Premium Medium Tower 230W PS
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- ○101 KeyTronic Keyboard

486-33DX	$2890
486-50DX/2	$3011
486-66DX/2	$3110

Highest-end you can find! AIR EISA VESA LocalBus Motherboard supports 256MB Memory on board, yes! 256MB using 72Pin 64MB SIMM!(Soon to be released) Great news for Imaging and Photographic software users! And with 8 EISA slots and 3 VESA LocalBus extensions, you can plug in any different bus cards you want! We bundle this machine with a 286 CPU built-in Promise DC-4030VL 1MB Cache Controller and rockets the Data Transfer Rate to 6950KB/Sec! This amazing controller supports 4HD/4FD and transfers up to 14.3MB/Sec. Besides we add a Diamond Viper VLB and make the Windows fly at 45 Million WinMarks. Believe it, you won't find a machine performs closer to this in any price!

Recommended Upgrades:

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Premium Full Tower	add $20
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Sony/NEC/Viewsonic/Nanao Monitor	add $Call

Basic System Includes: 486 Motherboard & Intel CPU, 1MB RAM-70ns, 2HD/2FD IDE Controller with 2S/1P/1G, 1.2M Teac Floppy Drive, Standard Mini-Tower Case with 200W Power Supply, 101 Key Enhanced Keyboard.

486 ISA System Configuration	486SX 25MHz w/128K	486DX 33MHz w/128K	486DX/2 50MHz w/128K	486DX 50MHz w/128K	486DX/2 66MHz w/128K
Basic System	$469	$563	$684	$700	$783
Basic System plus 85MB HD, 512K SVGA Card & .39DP Monitor	$888	$982	$1103	$1119	$1202
Basic System plus 4MB RAM, 85MB HD, 1.2&1.4FD, 512K SVGA & .39DP Monitor	$1025	$1119	$1240	$1356	$1339
Basic System plus 4MB RAM, 130MB HD, 1.2&1.4FD, 512K SVGA & .39DP Monitor	$1070	$1164	$1285	$1301	$1384
Basic System plus 4MB RAM, 213MB HD, 1.2&1.4FD, 512K SVGA & .39DP Monitor	$1130	$1224	$1345	$1361	$1444
Basic System plus 8MB RAM, 130MB HD, 1.2&1.4FD, 512K SVGA & .39DP Monitor	$1198	$1292	$1413	$1429	$1512
Basic System plus 8MB RAM, 213MB HD, 1.2&1.44FD, 512K SVGA & .39DP Monitor	$1258	$1352	$1473	$1489	$1572
Basic System plus 8MB RAM, 340MB HD, 1.2&1.44FD, 512K SVGA & .39DP Monitor	$1418	$1512	$1633	$1649	$1732

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486 AIR ISA VLB 256K 3 VLB Slot (33/50MHz) P5 Support, Bus-Mastering, US Made	$228/240
486 AIR EISA VLB 256K 3 VLB Slot (33/50MHz) Upto 256MB using 72Pin SIMM 8 EISA slots + 3 VLB Extensions, US Made	$465/500
486 Orchid VLB SuperBoard 256K Cache Rev. C 2 VLB Slot, Bus-Mastering (Upto 50MHz)	$242

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1MB RAM (256K-70ns SIMMx4)	$39
4MB RAM (1M-70ns SIMMx4)	$128
16MB RAM (4M-70ns SIMMx4)	$580
72Pin 70ns SIMM Module (4MB/8MB/16MB)	$150/270/627

Controller Card:

AT I/O 2S/1P/1G	$12
16Bit IDE 2FD/2HD with 2S/1P/1G	$14
IDE Caching Controller Card Upto 64MB, 2HD/4FD.	$139
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Orchid 2nd Revision VLB IDE Controller with I/O	$80
Promise DC-4030VL VLB IDE 1MB Cache IDE	$240+39
DTC 2270VL VLB IDE with 2S/1P/1G	$86
UltraStor SCSI-2 VLB 32K Bus-Mastering 34F	$285
Optional Software SCSI Driver Kit	add$35

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16Bit 1MB Tseng-4000 72Hz 32K Color	$81
SpeedStar 24X Accelerator 1MB 16.7M Color	$150
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Genoa WindowsVGA 8500VL VLB 1MB	$125
Orchid Fahrenheit VLB w/1MB STD/VA	$179/199
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Diamond Stealth 24 VLB 1MB DRAM S3-805	$174
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486-50DX	$1815
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Promise 1/4MB Cache VLB Controller	add$211/300
Western Digital HD 170/250/340MB	add$-25/45/160
UltraStor SCSI-2 VLB 34F + SCSI HD	add$Call
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KFC 14"/15"/17" Multisync Monitor	add$78/190/575
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486-33DX	$1467
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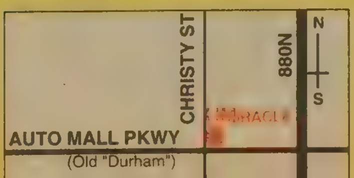

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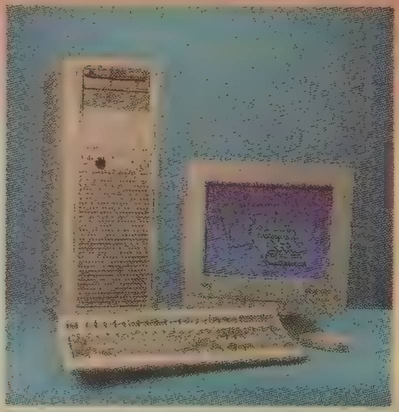

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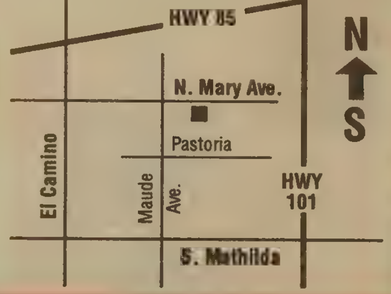

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continued from page 260

the button bars. The default settings on the button bar can be changed by dragging button icons on or off the bar; the defaults do not contain all the buttons available, so users can experiment with them. Some buttons, such as Define Colors, can be used in almost every menu group.

Incidentally, Ventura's color capabilities have been dramatically improved, with complete support for both Pantone solid and Pantone process colors, as well as the standard CMYK and RGB color mixing models. It's a good idea, however, to have a Pantone color selector card set handy when you experiment with the display colors; color representations on the screen will probably not match what you'll have on paper.

Ventura provides a button for inserting Index entries into your document; index entry markers can only be inserted into your document with the Text tool selected. Because of this, Ventura forces you to manually key in the text for the reference, or to first select the word or phrase and copy it to the clipboard. You can then insert the text into the Primary Entry or Secondary Entry sections of the Index dialog box. You can also create index entries based on the See Also.... method, as cross-references to related entries. When you generate your index, Ventura does not automatically display your Index file for viewing. The whole indexing system is quite serviceable, but imposes extra steps for the insertion of each entry marker, and doesn't compare to the speedier and more flexible indexing facilities of FrameMaker. It's not as simple to work with, and it's more time-consuming.

Tables of Contents, however, are nicely handled. TOCs are generated most quickly from using the Style Tags (known in most other programs, of course, as Style Sheets) for the appropriate chapter headings and paragraph numberings you wish to include. Doing so ensures a speedy and complete generation of a TOC.

In the final result, Ventura's long-document capabilities are about as substantial as FrameMaker's. The complexity of many of the program's long-document capabilities, however, especially concerning the structure of dialog boxes and command hierarchies, presents a different problem for the user from FrameMaker's non-Windows-standard interface.

While Ventura's button bar improves the ergonomics of the program, a very substantial commitment is still required for most users to master VP. The entire methodology of the program needs to be streamlined, and adding a button bar isn't enough.

It's a good start, though, and considering Ventura's large and loyal following it's understandably difficult to introduce traumatic changes to the old ways of doing things. One thing I'd like to see: allowing the moving of frames off the actual page on the screen onto the "pasteboard," enabling a larger effective working space. There's just not enough elbow room when a page gets crowded with various elements.

Conclusion

Along with the soon-to-be-released PageMaker 5.0 (see sidebar), it's safe to say that high-end DTP has become a hotly competitive market on the PC. All the major packages are represented with highly respectable versions of their product.

FrameMaker, in particular, does a magnificent job in its interplatform transfer capabilities and its consistency across platforms (while suffering the tradeoff of a nonstandard Windows interface). The upstart Quark XPress provides wonderful page layout flexibility but suffers from some output problems. Ventura, having undergone a substantial facelift, retains the virtues that made it great while also retaining some annoying quirks.

What's the best? I honestly can't say. Each program has its own personality and way of doing things. I hope I've managed, however, to convey some of the flavor of each package and its respective appeal. ■

PageMaker 5 What's New?

As of this writing, PageMaker 5.0 is still in late beta stages—and thus we can't do a fair performance evaluation or discuss the totality of the functions of the new version. What we can do is give those readers who haven't seen accounts of PageMaker 5 some idea of what the new version has to offer.

For the most part, PM5 is pretty much the same as the old version in its basic operation. It still embraces the Pasteboard metaphor, and allows you to dynamically place various text and graphics objects directly on the page and pasteboard, and resize them at will. It still allows for only one master page per document. The program, in short, is still distinctly recognizable. I've felt for awhile that PageMaker's teeth have been growing longer as the competition grew fiercer. What is new?

- OLE Client Support: Long overdue, OLE support allows PageMaker users to adapt text and graphics objects without tedious cutting and pasting, and the cumbersome back-and-forth movement between applications is a thing of the past.

- A revamped printer engine, which according to Aldus dramatically speeds up print times in both PostScript and PCL printers. The Print dialog box has been changed. Multiple page ranges or disconnected pages can now be selected.

- Aldus Extensions: Also long overdue, this feature has been available on Macintosh version 4.2 for a year now. Extensions for Drop Caps, automated Bullets and Paragraph Numbering, Expert Kerning (a more refined Tracking feature), and many others will finally be included in the imminent PM5. Expert Kerning will work only with Adobe Type 1 fonts, and not with True Type.

- The Control Palette: While superficially similar to that in Quark XPress, and embracing much of the same functionality, the floating Control palette enables the user to avoid pulling down menus to execute type handling functions, including rotation, resizing, skewing and cropping of objects, and typeface selection.

  By the way, Aldus has finally fixed that annoying pull-down font menu—you know, the one that scrolls down if you have a lot of fonts, but you can't see them past the bottom of the screen? They've finally set it to display all your typeface names in several columns. Quark, by the way, also suffers from this minor but irksome problem.

- Library Palette: Similar in function to the Tag and File palettes in Ventura Publisher, the Library palette allows you to manage collections of often-used objects in a handy list, and to drag-and-drop between the palette and the pasteboard or document.

There's quite a bit more, but the overall impression is that this is not a radical upgrade; many new features, plus a major rewrite of the printing system have been added, but PageMaker veterans should be very comfortable with the changes in the new version. Aside from a lack of multiple master pages and background colors for frames (since frames don't really exist in PageMaker), PM5 substantially matches Quark in its market segment. A complete review will appear in a future issue.

—Rich Grace

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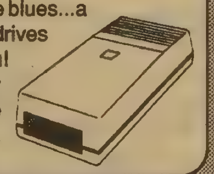

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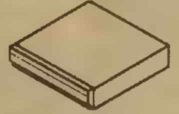
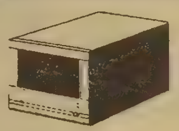


Style "A"



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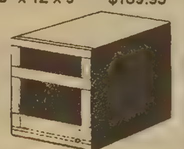

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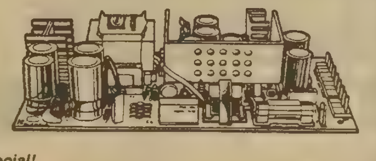
D. 3" x 5" x 1.5"	Protek, new. 110/220VAC input, 5VDC @ 3A, 12VDC @ 2A, -12VDC @ .3A output.	HSC #13728	$14.95 ea	*Special!*



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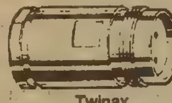

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continued from page 98

the Paradise card reviewed below, use DIP switches in this way.)

Fortunately, for most users, it should not be necessary to adjust the Fahrenheit VA's jumpers or DIP switches. In fact, on my test 486-33 system, physical adjustments weren't necessary. Performance of the Fahrenheit VA in most applications is very quick; in my tests, the VA was about 5% slower than the Powergraph X-24—an insignificant speed difference. Text scrolling in Microsoft Word for Windows was slightly slower but still very smooth; redrawing of pictures in CorelDraw and Aldus Freehand was as fast as any other card in its price class. Software setup for the VA card is Windows-based; the driver is simple and elegant, and is accessible from the Windows Control Panel.

Windows Accelerator cards are sometimes called video coprocessors because they take the Windows graphics drawing load off the main CPU (a 286, 386, or 486) of the computer, freeing it for other tasks.

The highest resolution that the VA card currently supports is 1280 x 960 pixels in 16 colors; most competitors support 1280 x 1024 resolution. Orchid allows you to run your screens with either small fonts or large fonts for your menu bars and Windows title bars. Another small but nice feature is Orchid's voice annotation. A small microphone is provided with the card, which you speak into to provide voice messages for application programs (such as Word of Microsoft Excel) that support OLE. I'd recommend, for best results, that you have a sound card to get the most out of this feature. Despite some complexities in setup, the Orchid Fahrenheit VA is a quality product that delivers speedy Windows performance. Orchid is a name of quality in the computer industry, and this card continues that tradition.

WESTERN DIGITAL'S PARADISE ACCELERATOR FOR WINDOWS

Paradise has been a longtime standard in the PC video card market. When Windows accelerators began appearing (with the advent of Windows 3.0) Paradise did not deliver a competing product until the fall of 1992. Based on Western Digital's proprietary WD90C31 chip, many users eagerly awaited Paradise's entry into this segment of the market. They'll probably still have to wait. The Paradise Accelerator comes out last in our Windows speed derby.

Let's first give Western Digital its due. Their Windows-based software driver installation is simple and straightforward, even more so than Orchid's. The card runs on 1MB of inexpensive 60ns DRAM, and comes with superb documentation. The Paradise card also supports resolutions of up to 1280 x 1024 in 16 colors, and offers high-color 800 x 600 support for Windows applications such as PageMaker and Ventura Publisher. Also, it's not necessarily fair to compare the Paradise card's speed with some of the more powerful cards in this article, because Western Digital's first effort relies on a 16-bit video chip, while all the others seen here use the latest 32-bit chips from S3.

Unfortunately, not only is Paradise's performance sluggish under Windows, but DIP switches and jumpers (as with the Orchid Fahrenheit VA) often must be set to cure display problems encountered during installation. Screen resolutions even at 1280 x 1024 and 1024 x 768 had a somewhat rough, jagged appearance. The Windows drivers also do not offer the "small fonts" and "large fonts" options available on other cards, which further adds to the crude appearance of high-res screens. Initially, I had to make adjustments on the card to make it work in my system, but after following suggestions offered by Paradise's excellent technical support (excluding specific memory segments in QEMM, setting DIP switches in certain ways, etc.), problems disappeared. Paradise will soon be releasing a card with a faster 32-bit video chip; this, combined with a more refined driver set, should go a long ways towards making Paradise a serious competitor. Regretfully, I must say that this product needs more work, but it's a good start. It's a bit behind the technical curve compared to the competition.

THE CLOSING PICTURE

Four cards do not even begin to provide an adequate overview of the choices available. Also, a card that causes trouble on one system (such as mine) may work swimmingly on another (such as yours). Test and evaluate cards carefully before you buy. It's unfortunate to have to issue negative reviews on any company's honestly supported product. Perhaps, however, some good will come of it, as companies strive to improve their offerings.

For now, I highly recommend the Powergraph X-24 card as a cheap, speedy card with good Windows drivers. I use it myself, and it's a real workhorse. For those who want a straightforward installation process and clean reliable hardware, the Sigma Designs Legend GX is a good bet. The Orchid Fahrenheit VA is also a can't-miss option for those who can spend a little more money. ■

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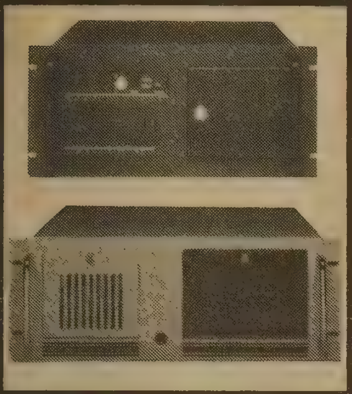

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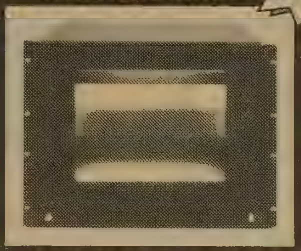

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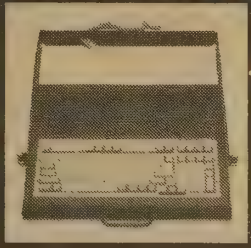

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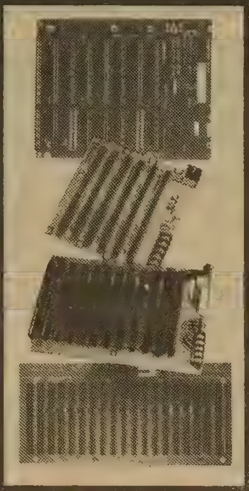

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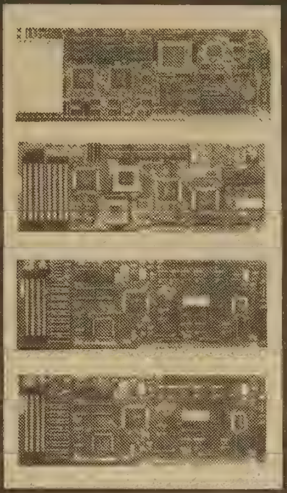

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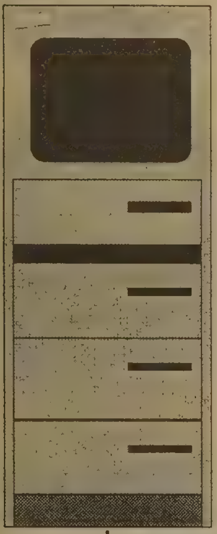
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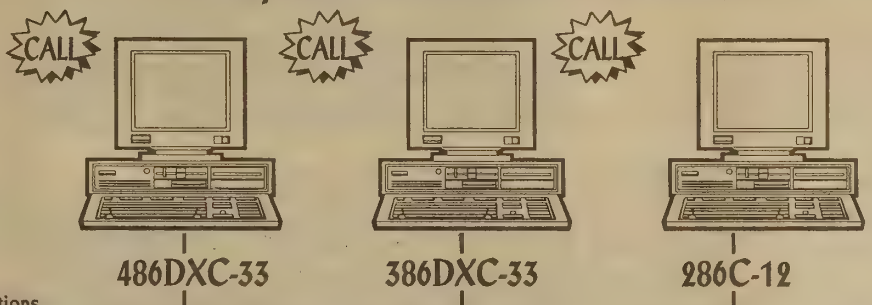
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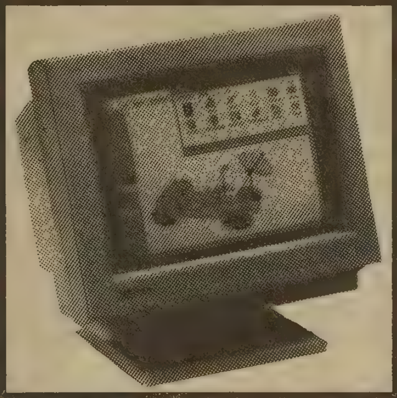

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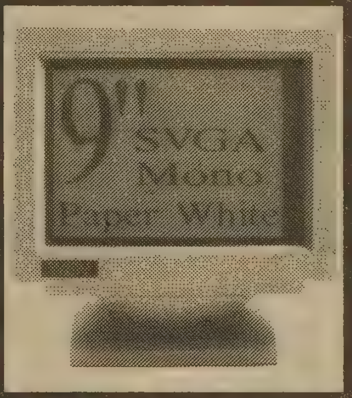
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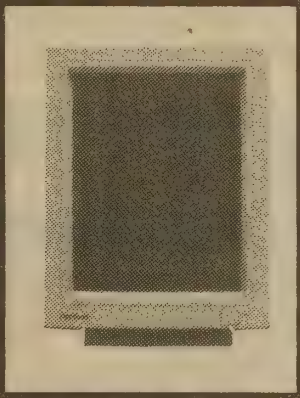

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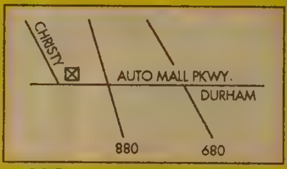

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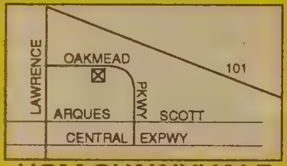

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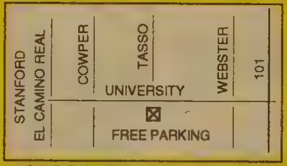

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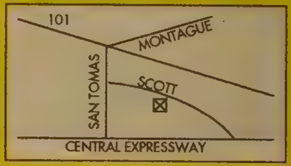

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Images from the Magellan and Viking missions, among other things, are available from "ames.arc.nasa.gov" in the directory "space/cdrom". Again, you need to be able to display the GIF-format images after you download them.

Food: All this poking around the Internet is enough to make a person hungry. Fortunately, the net can help you there, too. Although they haven't perfected a server to bring you food, you can learn all about food and nutrition using PENpages.

PENpages is a database which contains thousands of reports, newsletters, and facts about agriculture and consumer-oriented nutrition information. In most cases, the actual text of the research and newsletters is online and available for your immediate perusal. For example, a search for "vegetarianism" revealed two dozen articles about or referring to vegetarianism. The software is quick, easy to use, and offers lots of online help.

To use PENpages, telnet "psupena.psu.edu" (or 128.118.36.4). When asked for a username, type "OH" (for Ohio.) The system is self-explanatory.

If you're more interested in cooking food than reading about it, FTP to "gatekeeper.dec.com". In the directory "pub/recipes" you'll find dozens of recipes, from tofu balls to pizza dough, and margaritas to meat loaf. Also check out "mthvax.cs.miami.edu" in directory "/recipes".

Libraries: The computer's ability to hold vast amounts of data—and search through it quickly—makes research that once took hours take only seconds. Another benefit is that you no longer need to be where the information is—going to the library to search through a card catalog is a thing of the past.

Bibliographic information about materials in the Library of Congress is available by telneting to 192.65.218.43 (dra.com.) Actually, it's only a subset of the complete Library of Congress holdings, but it's still quite vast and quite useful. (Searches for *MicroTimes*, Laurie Anderson, and rutabagas all provided more than enough information to start a research project in the right direction.) The program allows searches by title, author, subject, and other methods. The system provides quick searches and useful online help. The actual documents are not online, but once you have the call numbers of the materials you want, you can trot down to your local library to collect them.

MELVYL is the University of California online library system. It also serves California State University libraries. MELVYL holds over seven million unique book titles in all. In addition to access to the full MELVYL catalog and periodical listings, the system can connect you to ten other university libraries around the country.

Unfortunately, MELVYL does not provide Internet users all of the features accessible to UC students. For instance, indexes to recent journal articles are not available. To use MELVYL, telnet to 192.35.222.222 (melvyl.ucop.edu).

A plethora of reference information is on hand from INFO, the Rutgers University Pilot Campus-Wide Information System. Online materials include the Concise Oxford Dictionary, Oxford Thesaurus, two quotation references, the CIA world fact book, and various religious texts. Also online are hypertext electronic documents and other examples of the future of online retrieval. To use the service, telnet info.rutgers.edu (128.6.26.25) from the main menu, and select "library." The system also contains information probably useful only to those who attend Rutgers. Even though it is a "local" system for their use, the operators are kind enough to share their resources with the general public.

Also, check out CARL, at pac.carl.org (192.54.81.128). CARL provides access to two dozen other libraries' catalogs, as well. Unfortunately, a lot of the interesting information on CARL, like the online encyclopedia, isn't available to the general public.

Now, if you just want to look up a word, no problem. Ask Webster. Many systems have the Webster program all ready for you to use (type "webster" to see.) If not, a public Webster client will assist you. Type "telnet cs.indiana edu 2627" (or 129.79.254.191 2627) to access the dictionary and spelling service.

Once you connect, the program won't prompt you for input. Type "SPELL" (be sure to use all capitals) followed by a word to verify the spelling of a word. If your word doesn't match anything in the dictionary, it will try to guess the correct spelling. The program also provides definitions to words: type "DEFINE" and your word to see the definitions. There are other commands as well, so type "HELP" to get a full set of instructions. Type "QUIT" to leave Webster.

For more information about finding catalogs online, download the file "library/internet.library" by FTP from ariel.unm.edu. This is a list of Internet-accessible catalogs and databases.

Misc.: Nuclear data is available by telneting to 130.199.112.132 (Username: nndc). To receive daily stock updates by electronic mail, send an email request to martin.wong@eng.sun.com. ■

Figure: Example FTP Session

```
steer[3] ftp wuarchive.wustl.edu
Connected to wuarchive.wustl.edu.
220 wuarchive.wustl.edu FTP server (Fri Nov 20
  10:29:15 CST 1992) ready.
Name: anonymous
331 Guest login ok, send your complete e-mail
  address as password.
Password: waffle@steer.sdsu.edu
230-
230- This system may be used 24 hours a day,
  7 days a week. The local
230- time is Fri Jan 8 23:09:04 1993.
230-
230-Please read the file README
230- it was last modified on Mon Mar 2 08:29:25
  1992 - 311 days ago
230-Please read the file README.NFS
230- it was last modified on Thu Nov 12 12:50:58
  1992 - 56 days ago
230 Guest login ok, access restrictions apply.
ftp> binary
200 Type set to I.
ftp> cd /mirrors/EFF/internet-info
250 CWD command successful.
ftp> ls
200 PORT command successful.
150 Opening ASCII mode data connection for
  file list.
ptrs
interest-groups.txt.Z
usenet.qa.Z
usenet.newsgroups.Z
usenet.etiquette.Z
read.this.first.Z
privatized.nren.Z
lynch.Z
lita.nren.Z
internetworking.Z
internet.usenet.info.Z
internet.q.Z
internet.mailing.lists.Z
internet.libraries.Z
hitchhikers.guide.Z
gore.bill.Z
ftp.sites.Z
cisler.nren.Z
bitnet.info.Z
etiquette.Z
226 Transfer complete.
338 bytes received in .1 seconds (3.3 Kbytes/s)
ftp> get hitchhikers.guide.Z
200 PORT command successful.
150 Opening BINARY mode data connection for
  hitchhikers.guide.Z (23014 bytes).
226 Transfer complete.
local:    hitchhikers.guide.Z    remote:
  hitchhikers.guide.Z
23014 bytes received in 1.6 seconds (14 Kbytes/
  s)
ftp> quit
221 Goodbye.
steer[4] uncompress hitchhikers.guide.Z
steer[5] cat hitchhikers.guide
```

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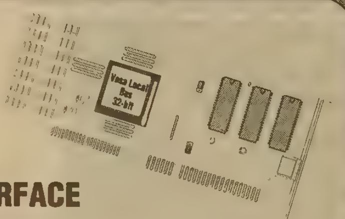

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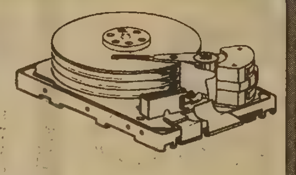

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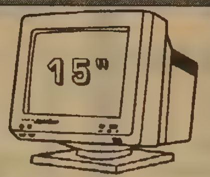

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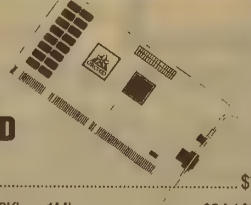

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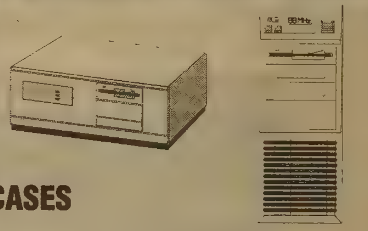

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SoundBlaster

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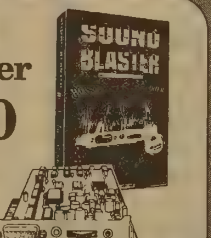

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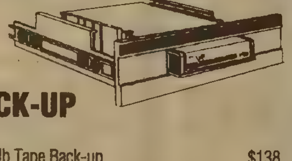

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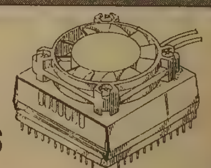

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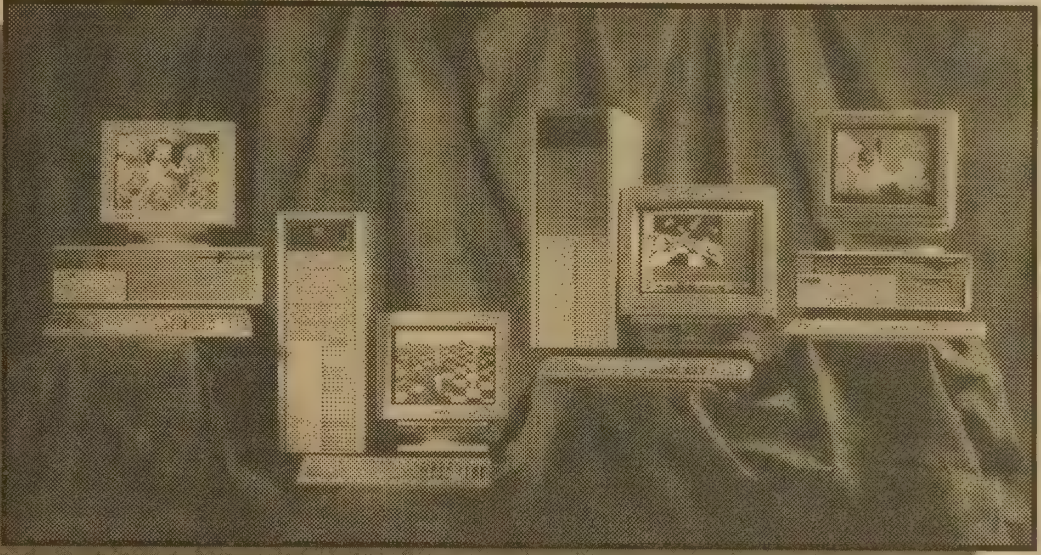

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486DX2-66	**$1498**
486DX-50	**$1398**
486DX-33	**$1258**
486SX-25	**$1128**

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- ★ IDE Controller 2HD & 2FD w/ 2s, 1p, 1g Port
- ★ Floppy Drive **1.2Mb & 1.44Mb**
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- ★ 14" Super VGA Color Monitor (1024x768)
- ★ 101 Keys Enhanced Keyboard
- ★ Mini Tower Case w/ 200 Watts Power Supply
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486DX2-66	**$1418**
486DX-50	**$1298**
486DX2-50	**$1268**
486DX-33	**$1178**

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- ★ 64K Cache
- ★ **4Mb Ram** installed expandable to 32Mb
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- ★ Floppy Drive **1.2Mb & 1.44Mb**
- ★ **Hard Disk 130Mb** IDE 15ms (Maxtor 7120A)
- ★ Trident 9000 Super VGA Card 512KB (16-bit)
- ★ 14" Super VGA Color Monitor (1024x768)
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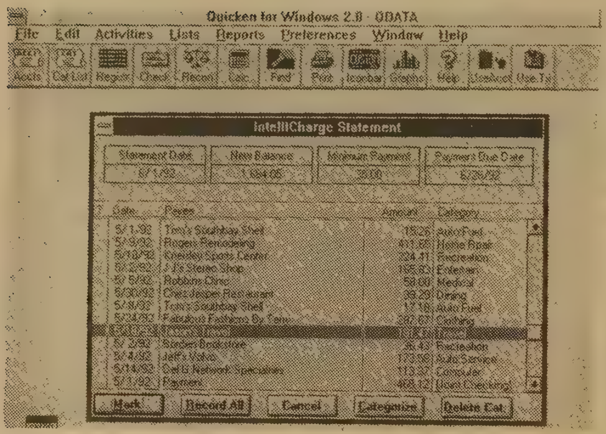
PIXEL U.S.A.

continued from page 130

out, the information is simultaneously entered into the check register and sorted into the appropriate categories. If you elect to handwrite checks, you can do so and simply enter the data into the register. Also, an option is available to pay the checks electronically through CheckFree, a service you use via your modem. Fill out the checks just like you would if you were going to print and mail them yourself, but instead of printing the final check, you mark a box that indicates the payment will be paid electronically. Quicken sends the collection of orders to CheckFree where the payment is made either by check or by an electronic transfer. CheckFree can also pay recurring monthly bills for you according to your instructions. The cost for the CheckFree services are only a little higher than printing and mailing the checks yourself.


Quicken for Windows 2.0 - QDATA
File Edit Activities Lists Reports Preferences Window Help
IntelliCharge Statement
Mark
Record All
Cancel
Categorize
Delete Cat

Intellicharge, for both Windows and DOS versions, is a new software and service feature that can automatically record and catagorize your credit card transactions

Installation of the program in either the DOS or Windows version is simple. If you are upgrading from an earlier version, your data will be maintained and will automatically be converted to the new format if necessary. In the new versions of Quicken, help is available at every turn. As you type commands, for instance, help windows automatically appear alerting you to options and walking you through the process. These messages are easily turned off as soon as you no longer need the help.

A tutorial is available for new users, but the on-screen help is so good that it may not be necessary to even use this feature. Also, the printed documentation is excellently organized. In the early days, documentation for the program was a simple booklet, but as the program grew in capability and complexity, the documentation experienced a similar expansion. Quicken now comes with a slim booklet devoted exclusively to getting up and running. After you have played with the program a bit, you can delve into the 300+ page documentation to learn anything you might need to know. And, of course, if all else fails, you can call for technical support.

I found one bug in the program and spent quite a bit of time with the technical support staff. In the end, it turned out that the program was right, but that the documentation was at fault. In any case, it gave me an opportunity to check out the technical support facilities, and I am happy to report that they kept working on the problem until we found the solution.

The preparation of hundreds of reports is another of Quicken's great strengths. There is virtually no set of data that cannot easily be grouped together in the way you want. Graphs are also available at the touch of a button and from anywhere—a graph or report—you can call for supporting data and find your way back to the individual transaction or transactions involved.

While Quicken was originally designed for individuals, it has proven so capable that many small businesses are finding it meets their needs. The Windows version actually is boxed as a Business Pack and includes a Business Guide in the documentation. It will prepare invoices through QuickInvoice and manage your payroll through QuickPay.

Years ago, people made fun of using a computer to balance a checkbook. Quicken has evolved to manage your finances. Anyone who uses a checkbook should seriously consider using this program. ■

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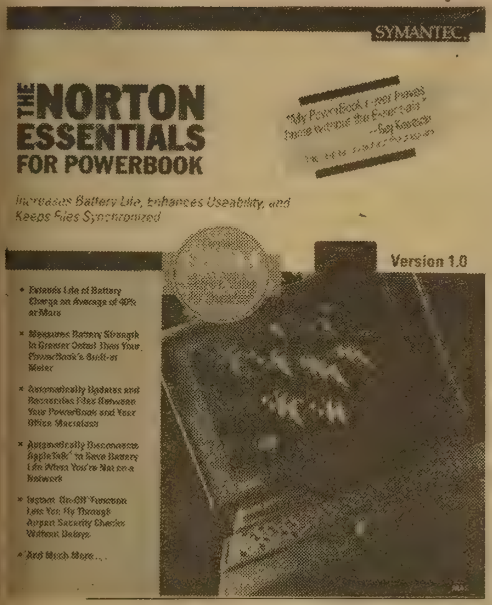
Continued from page 202

hard disk spins down, until the system sleeps, or until the processor rests. Instant Access for AppleTalk monitors your network, automatically disabling AppleTalk if you disconnect. When you reconnect, it reestablishes network services without making you restart the PowerBook. This frees about 200K of memory that would otherwise be used by the system.

Airport Shutdown lets you do a minimal startup and then immediately turns off the PowerBook. This is for airports where security personnel require proof that a portable computer actually works (and does not detonate) before allowing it as carry-on baggage.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Caps Lock Control offers alternatives for toggling the caps lock key. Power Cursor lets you modify the cursor, to make it more visible on an LCD screen. Power Guard lets you set password protection for startup, restart (after shut down), or wake up (after sleep). You can also blank the Desktop when the PowerBook goes to sleep.

QuickNotes provides a way to keep track of important small items of information, making them instantly accessible. You can enter up to thirty-two items. Each item can have a keyword field of thirty-two-characters and a description up to sixty-four-characters. You can even set a password to protect your Quick Notes.

Syncit! compares any two folders; one on your PowerBook and one on another volume, and synchronizes the two folders so that they contain the exact same files. In the process of reconciliation, Syncit! may copy a file from one folder to another, or replace a file with a more recent version.

These "Essentials" may not be so essential for some PowerBook users:

- Some features are available as part of System 7.1. It might be confusing and redundant to duplicate them.
- Many features are duplicated by public domain or shareware utilities available on any Mac BBS, or by applications you already use such as QuicKeys, Norton Utilities for Macintosh, and After Dark.
- For the cost of this program, you could buy your PowerBook a spare battery pack.

(Symantec, Inc., 10201 Torre Ave., Cupertino, CA 95014-2132. 1-800-441-7234)

DIMENSIONS

Published By: Adobe Systems, Inc.
List Price: $199
Reviewed By: Matthew Leeds

Dimensions is a graphics application for creating and editing 3-D objects and effects. With it you can create 3-D objects, map 2-D artwork onto 3-D objects, and turn 2-D art into 3-D. Dimensions is different than any other 3-

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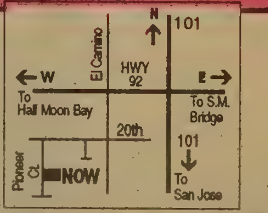

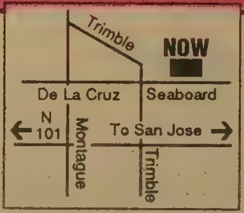

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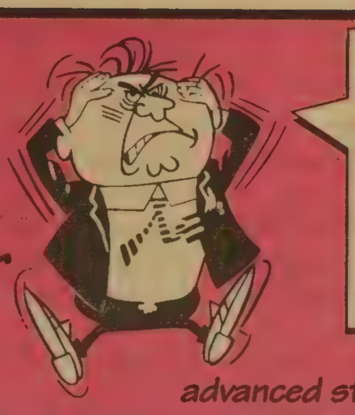

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- Which is better... IDE, SCSI or an ESDI Hard Drive?
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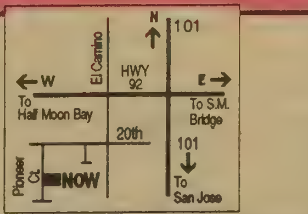

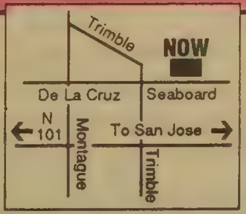

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D program in that it works with fully editable PostScript Bezier curves.

While Dimensions offers some basic shape primitives and tools with which to assemble them into more complex objects, most users will import art from Illustrator, Freehand, or other programs that create 2-D PostScript art. Once imported you can rotate, extrude, bevel, and otherwise manipulate the art. In addition, Dimensions automatically generates shading based on lighting, view angles, and surface properties that you select. You may also map 2-D artwork onto a 3-D object. Once you've rendered the final image, you can export it back to a 2-D PostScript program for additional editing or printing. There is no PICT export capability.

While 3-D programs are commonplace, PostScript Bezier import and export capability is not. Dimensions' interface is relatively easy to use, and instantly familiar to anyone experienced with Illustrator. Files generated by Dimensions are much smaller than PICT files, and since they're PostScript, they scale with no pixelation. This is an excellent program for illustrators and graphic designers. However, you may find you need Illustrator, Photoshop, or other programs to complete projects started with Dimensions. (Adobe Systems, Inc., 1585 Charleston Rd., PO Box 7900, Mountain View, CA 94039. 415/961-4400)

BOOK REVIEWS

WINDOWS 3.1 SECRETS

Written By: Brian Livingston
Published By: IDG Books
List Price: $39.95 (with 3 disks)
Reviewed By: Rich Grace

There's a dizzying array of books on Windows, far too many to list here. Most of them repackage the information contained in the original Windows 3.1 manual, and are aimed primarily at beginning Windows users. Brian Livingston's book, *Windows 3.1 Secrets*, goes beyond most of the crowd to provide information for users at all levels; from beginners to jaded experts.

Remember the blue Windows logo that pops up whenever you start the program? Livingston shows you a way to substitute your favorite bit-map graphic for that logo. There's an excellent chapter on customizing your Windows start-up using many of the subtleties and hidden features of the Windows system. There are extensive descriptions of the cryptic WIN.INI and SYSTEM.INI files, knowledge of which is essential if you ever want to go beyond the basics of Windows operation.

A huge section of the book is devoted to help owners of specific computer systems and computer parts (such as SCSI hard disk controllers) set their systems up properly. *Secrets* also has a chapter on TrueType, which is probably the most extensive discussion you'll find on the subject. And an equally vital chapter on telecommunications under Windows. There is so much useful information in this huge book (990 pages!) that it's impossible to mention all of it here. My only complaint is that the three disks provided with the book contain mostly Windows-based shareware programs, which prove difficult to run unless you immediately register the program in question. This renders the software essentially useless. It would be nice if a book-only version was sold, saving cash-strapped users some money. No matter what, *Windows 3.1 Secrets* is readable, interesting, and essential for any serious Windows user. Highly, highly recommended. (IDG Books, Inc., 155 Bovet Rd., Ste. 610 San Mateo, CA 94402 415/312-0650)

THE MACINTOSH READER

By: Doug Clapp
Published By: Random House Electronic Publishing
List Price: $25
Reviewed By: Mike Markowitz

In Greek mythology, Narcissus was a handsome lad who became so obsessed with admiring his own reflection in a pool of water that he pined away. The Gods took pity and turned him into the flower of the same name. Narcissism is an abiding characteristic of the Macintosh community. Fortunately, the Gods have taken pity and assigned Doug Clapp the task of collecting this anthology of Macintosh ephemera, trivia, and hagiography.

Like the Tablets that Moses brought down from Mt. Sinai, the book is divided into ten sections:

- In the Beginning
- Early Years, Early Tears
- Heroes and Villains
- Winners and Losers
- But Seriously Folks...
- Macintosh Art
- Mac Opinions: But what do you really think?
- Tips, Secrets, and Good Advice
- Here and Now
- Soon or Never

Memorable items include Mary Eisenhart's 1988 interview with John Sculley (which caught him during his brief "I-Can-Be-Just-As-Visionary-As-Steve-Jobs" phase), and Chris Crawford's hilarious essay on "Why the Mac Is Hard to Program."

There is a fascinating transcript of an online conference with Apple's System 7 development team, and a long list of Mac-oriented bulletin boards (current as of March '92).

Doug Clapp of Edina, Minnesota, is an author, software designer, and former columnist for *InfoWorld* and *MacUser*. His *Macintosh Reader* will be of interest to anyone who deeply loves the computer, and of value to anyone who has an upcoming job interview at Apple or Claris and needs to pick up a lot of industry background, folklore, and gossip in a very short time.

The Macintosh Reader is only about 1.6MB of data, but no digital version, oddly enough, is offered by the misnamed Random House Electronic Publishing Co. (Random House Electronic Publishing, New York, 1992. 453 pages, ISBN 0-679-74242-5)

POWERBOOK: THE DIGITAL NOMAD'S GUIDE

Written By: Andrew Gore and Mitch Ratcliffe
Published By: Random House Electronic Publishing (384 pages, includes one high-density disk with software)
List Price: $24
Reviewed By: Mike Markowitz

With over half a million Macintosh PowerBooks out there, a booming market exists for information about the little critters. Any digital nomad willing to carry a book along will find *PowerBook: The Digital Nomad's Guide* to be a useful and entertaining companion. For those not willing to lug another pound of paper, the publisher also offers the complete text on disk.

The authors are senior editors of *MacWeek*, with enough good karma at Apple to get John Sculley to write their introduction. Descriptions of every model up to the Duo 230 are pasted in pretty much unmodified from Apple's spec sheets. I would have liked to see more details on the development history and internal architecture of the PowerBooks, but this is not the sort of information Apple likes to share with The Rest of Us.

The book examines key features of System 7.01 and 7.1, with detailed and practical suggestions on pruning your System Folder down to the bare essentials. A lot of the book's information on system utilities and network file sharing could be gleaned from Apple's manuals, but Mac users refuse to read manuals.

The best feature of the book is the "Roadside Assistance Kit," a disk bound into the back cover. With patience and sharp implements you can remove it without trashing either the disk or the back cover. The disk contains a self-extracting StuffIt archive that unpacks nine different applications and utilities—2.6MB of software!—onto your hard drive. The collection includes:

- Demo version of AgentDA: a personal calendar, appointment book, and scheduler (this time-locked version self-destructs

Continued

ninety days after installation; but a Read Me file offers a special deal on buying the real version)

- Applicon: lets you switch between applications by clicking on "tiles" in the menu bar
- Dynodex: an electronic address book, with excellent printing options
- QuickKeys for Nomads: a set of handy command macros, customized for PowerBooks
- Demo version of Spiral: a RAM-resident notetaking application (keeping everything in memory saves on battery power that would otherwise be needed to spin the hard disk)
- SuperClock 3.9.1: displays the time and a battery indicator in the menu bar
- Synchro: synchronizes files and folders on a PowerBook with those an another Mac to ensure that all contain the latest version
- Glider and Klondike: two popular games

PowerBook: The Digital Nomad's Guide looks like a good value for most users, particularly beginners. The cost of the book is less than the connect time charges you might rack up downloading these applications, or equivalents, from an online service. (Random House Electronic Publishing, 201 E. 50th St., New York, NY 10022. 212/751-2600)

MACWORLD NETWORKING HANDBOOK

Written By: David Kosiur and Nancy E. H. Jones

Published By: IDG Books

List Price: $29.95

Reviewed By: Matthew Leeds

Setting up a Macintosh network is deceptively easy. A network interface is built into every Mac, the operating system explicitly recognizes the concept of a network, and for small networks you don't need additional software or a server. Why on earth would you need a 500+ page book to set up and run a Mac network?

If your network is small, uncomplicated, and you have no plans for it to get larger, this book may be overkill. If, however, you find yourself suddenly promoted into managing a network with dozens of Macs, printers, a server or two, perhaps a network modem or fax, and plans to expand by 200% next year, this book is just the ticket.

Macworld Networking Handbook offers a wealth of information, starting with a grounding in the network concepts you need to design and manage Macintosh networks that work for you instead of you always working on them. The book begins with the nitty gritty of how networks work, from the physical components of a network to the AppleTalk protocols and OSI reference model that form the foundation of Mac networks.

There is a detailed planning section on setting up or expanding a network (nine chapters) that covers everything from a simple PhoneNET network to an international wide area network. There are excellent trouble-shooting guides throughout, and three chapters on connecting your Macs in a mixed computer network. The *Macworld Networking Handbook* can be intimidating at times in its coverage of the technical aspects of networking, but it can't be faulted on its breadth of coverage. (IDG Books, 155 Bovet Rd., Ste. 730, San Mateo, CA 94402. 415/358-1250) ■

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that cause VDT eye strain include resolution, screen flicker, glare, and radiation. The Samtron SC-428TX, in common with a number of monitors on the market now, addresses these problems with the following features and specifications—it is a 14" SuperVGA non-interlaced, high-resolution (up to 1024x768), high refresh rate (43.5 to 72 Hz) monitor with a low 0.28 dot pitch, and an etched and polarized non-glare screen coated with silica or chemicals.

Non-interlaced (which means that a monitor scans one line at a time, rather than every other line on two passes), high-resolution and high refresh rate all affect screen flicker. Non-glare screens have less reflection. Being anti-static keeps dust, which can irritate your eyes, off your screen.

MONITOR RADIATION AND THE VLMF STANDARD

There still remains controversy as to whether the radiation emissions from monitors pose a health threat. The consensus seems to be that no matter what, monitor radiation is not as dangerous as living near a power line. However, many monitors emit very low electric and magnetic radiation—at such low levels (2kHz- 400kHz) that the two types of emissions no longer respond to the same emission blocks. While electric radiation can be blocked by anti-glare, reducing emissions of very low magnetic frequency (VLMF) requires special manufacturing. VLMF monitors have become commonplace in the European market, where Sweden has developed a guideline standard known as MPRII 1990:10; the market in the United States has been fairly small so far. However, the situation seems to be changing—the new MAC monitors proudly claim VLMF status.

> *One of the things I like most about my notebook (after its portability), is the LCD screen. Even if it's awful in sunlight, in an office I can stare at it for eight hours straight, and still walk away feeling like a sentient human being. Luckily, I found that I could do the same thing with the SC-428TX.*

Typically VLMF monitors are not significantly more expensive than their non-VLMF counterparts, thus conventional wisdom tends to vote in favor of purchasing the non-VLMF monitors despite the lack of hard evidence. They do emit less radiation, which further cuts down on eye strain. Samtron produces a VLMF model of the SC-428TX, known as the SC-428TXL, which is roughly $30 additional. Interestingly enough, LCD screens emit no radiation, and flat screens emit less than curved screens.

IS IT WORTH IT?

I'm now down to seeing a chiropractor once a month. My neck and back are nowhere near as tight as they were, even when I work to all hours of the morning. And investing in preventing health hazards will certainly save money in the long run. I'm still a fan of notebooks, but have converted to the opinion that for long stretches of office computer use it's best to at least attach a monitor. ■

What's
Happening?

Check the Microtimes Calendar of events in this issue for computer-related classes, seminars, and shows in your area.

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Continued from page 54

ward based on the Learning Path titles. Complete course description and guidance for any of these Paths is available from Sun Microsystems or through an authorized training facility.

The End-User Learning Path starts with the fundamentals of SunOS and OpenWindows 3.0 for Users and moves to UNIX Video Screen Workshop, SunOS for Users, SunView, and OpenWindows. Also available with this "course block" are Shell Programming and Productivity Skills for Your Sun Workstation.

The System Administrator Learning Path starts with System Administration Essentials and System Administration and moves on to Shell Programming, Managing Your Network Using SunNet Manager, and Advanced System Administration.

The Hardware Maintenance Learning Path begins with Sun System Maintenance Essentials and continues with either SPARC Desktop or Deskside/Datacenter System Maintenance. This is followed by New Products Maintenance and specific product maintenance courses for Sun hardware.

The Programmer Learning Path incorporates the UNIX Video Workshop and SunOS for Programmers and progresses to courses for specific programming languages. Also available are specialty courses for graphics programming and system programming.

> **With over a half million users, Sun workstations are commonly used for engineering, large accounting databases, computer aided design, military applications, and medical applications such as Magnetic Resonance Imaging.**

SCHEDULING SUN TRAINING

Sun Microsystems distributes a bulletin denoting the courses they offer. Sun training is available through a nationwide network of training centers. All applicants are screened for training qualification. Applicants who do not qualify as being ready to attend the Sun training courses are still eligible to attend but must sign a waiver acknowledging that, upon course completion, they may lack necessary skills to operate a Sun system effectively.

In some areas of the country, such as Southern California, Sun training courses are in great demand. To help alleviate the situation, Sun Microsystems has certified New

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THE NEW HORIZONS TRAINING EXPERIENCE

New Horizons is a computer training organization with headquarters in Santa Ana. With thirteen training facilities franchised nationwide, they offer both classroom instruction at their offices as well as contracted on-site training. Although New Horizons does not offer job placement, job prospects for a qualified Sun systems administrator are good.

Having toured the New Horizons headquarters training facility, I was very impressed by their attention to training material development, large classroom computer labs, and an extensive support staff. The Sun instructors are trained and authorized by Sun Microsystems. Class sizes average ten to fifteen students. Currently, only the facilities in Santa Ana offer Sun training. The New Horizons sites in Dallas and Detroit are also planning to include the Sun curriculum.

Robert Hudock, an account executive for New Horizons, has a great deal of enthusiasm for the courses offered. Armed with extensive knowledge of course material, he feels that New Horizons addresses any aspect of computer training needs. Robert commented, "It really takes actually seeing the training environment to appreciate our facility. Our students are invariably pleased with what we offer."

Vince Rowe, an advanced applications training manager for New Horizons, exhibits the same level of enthusiasm. With an extensive background in multiplatform computer systems, the Sun workstation is no mystery to him. He is directly involved in tailoring course material and instructing students. Vince remarked, "The Sun system is far and away more difficult than any standard desktop computer. With Sun systems so widely used by major corporations requiring data intense applications, knowledgeable system administrators are highly in demand."

Timothy Blair, an assistant resource specialist for a large Southern California concern, is delving into Sun system administration at the request of his employer. He has been using a Sun system for some time and has worked on an IBM PC for about two years. He was ready to learn about the Sun system on an "operating system level." Having completed the introductory Sun training course at the New Horizons Computer Learning Center, though not ready for system administration, he feels comfortable with having acquired the basics in UNIX operation. He felt that the course introduction was very good, although course pacing was challenging at times. Timothy reflected, "The course material was well laid out. The training was far better than what I've experienced from other companies." Timothy was obviously pleased with his training. The training was a good investment in his intellectual capital.■

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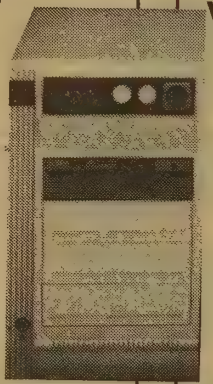

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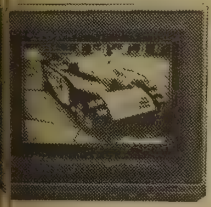

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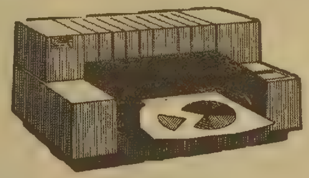

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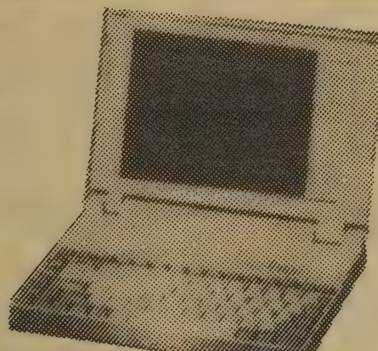

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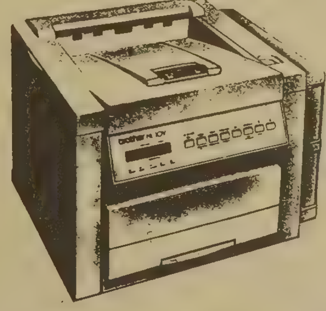

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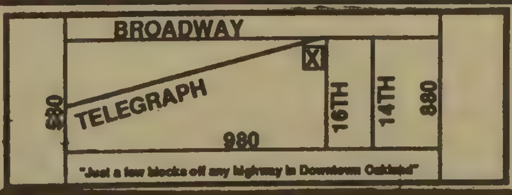

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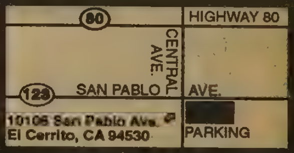

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Multi Media & beyond

In this month's section, Doug Nakakihara visits the graphics wizards at Valencia's Foundation Imaging, where the special effects for *Babylon 5* are produced on the Amiga. Also, Jonathan E. continues his Multimedia 101 series with a look at current markets and titles.

Babylon 5

Valencia's Foundation Imaging Brings The Amiga To Prime-Time TV

BY DOUGLAS J. NAKAKIHARA

Amid the commercial buildings in Valencia lies Foundation Imaging, the company behind all of the computer graphics for the Warner Bros. pilot TV program *Babylon 5*, which aired locally this last February.

Although computer-generated effects are nothing new to television, this is undoubtedly the first time the special effects were handled by a desktop computer using essentially off-the-shelf software and hardware. Not just fictional equipment displays—actual full-screen visual effects.

The main players at Foundation Imaging are Ron Thornton (visual effects director), Paul Beigle-Bryant (computer imaging director), and Shannon Casey (producer). With the help of the Commodore Amiga and Lightwave, a 3-D modeling and rendering program bundled with NewTek's Video Toaster, they were able to create the show's visual effects for a fraction of the cost of traditional methods.

For example, the TV show *Star Trek: The Next Generation* relies heavily on the use of miniature models and motion control equipment to achieve its effects—a costly and time-consuming method. By comparison, the Lightwave-generated effects took about one-fourth the time it would have taken using models, and required less personnel. In fact, most of the 3-D objects were created solely by Ron Thornton.

SPECIAL EFFECTS BUILDING BLOCKS

Thornton is a veteran special effects model builder. This probably accounts for his ability to create such complex and vivid 3-D objects.

He explains, "You have to do something different from *Star Trek*. It's a different show, it's got to look different. So the first thing we didn't want to do was gray spaceships. We wanted to get them nice and colorful. We also didn't want blank black space, which is something else *Star Trek* always does. So we wanted the nebula in there. We wanted to get more of a feel like the covers of science fiction novels.

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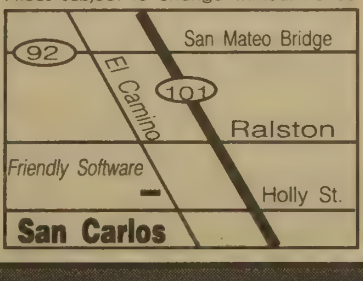
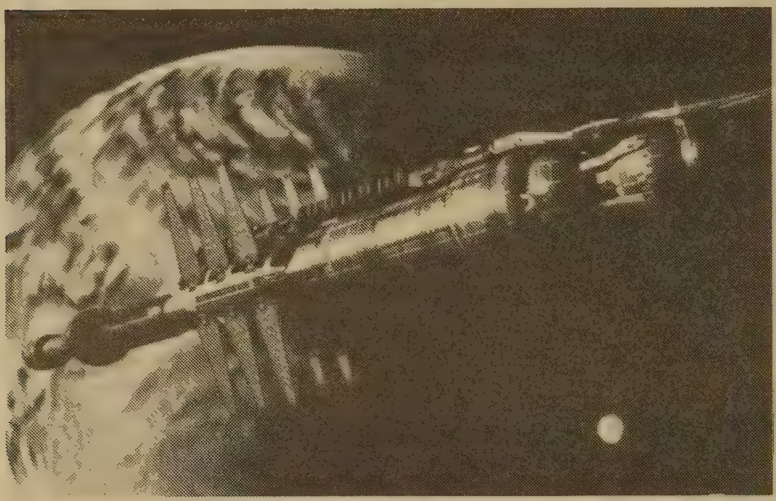


Very colorful." Many of the ships also have large moving or rotating parts, something you don't see very often in other science fiction series.

For some of this colorful inspiration, Thornton tips his hat to a '60s science fiction TV show called *Thunderbirds*, which was centered around five spaceships, Thunderbird One through Five, each having distinctly different colors and designs. (He shyly admits that he does have Thunderbird One modeled in 3-D.)



Three-D objects are composed of one or more polygons, organized into logical groups called surfaces. These surfaces essentially act as building blocks which are pieced together to form the entire object. Each surface can have its own color, texture, reflective principles, etc. via image maps.

The *Babylon 5* space station required approximately two hundred thousand polygons, one hundred surfaces, and sixteen different image maps. Thornton uses a lot of surfaces in his models to give them a more realistic look. "When you cylindrical-map a sphere, the closer you get to the top, the more the images will squash up. So we separated the sphere up into different segments, so that you maybe map an image twelve times around the waist. Then you map it like: ten times here, eight times there, and six times there, and it doesn't squash up. So it retains a panel size throughout the whole thing, but still has the right sort of perspective."

Adds Beigle-Bryant, "The reason it looks complicated is because it *is* complicated."

Of course, not all of the effects are as complicated as they appear. In fact, some effects are quite simple, but still convincing. The nebula that appears in space is nothing more than a curved strip of polygons with an image mapped onto it. One ship's weapon power-up electrical discharge is really just a simple DeluxePaint anim played over and over. In the scene which includes hundreds of ships, the ships in the far background are actually very simple 3-D objects. Since these ships would appear as just blurred specs in the distance, there was no reason to waste resources on them.

All of this points to Thornton's knack for creating effects using an optimum amount of effort. It amounts to the difference of not only knowing what you can do, but also, whether you should do it. He attributes this talent to his cinematic background, something he finds lacking in many people doing computer-generated animations today.

According to Beigle-Bryant, one of Foundation's biggest problems is finding good people. "There are plenty of computer graphic animators, but there are very few cinema-graphic computer animators."

"Somebody who has experience in film," interjects Thornton. "Somebody who has basically been educated in how to compose a shot. Using the computer as a tool rather than an end unto itself."

FOUNDATION: THE EQUIPMENT ODYSSEY

Thornton first became aware of the Amiga while he was working in Canada and heard about the Mandela system, an Amiga-based system that allowed people to interact with computer graphics. When he got back to the States he was interested in getting a computer for himself, so he and Beigle-Bryant decided to check out the Amiga at an AmiExpo being held in Los Angeles. At the show, NewTek was demonstrating an Amiga with a prototype Video Toaster card. Recalls Thornton, "It looked like it was a crackin' good machine."

When the Video Toaster was finally released, Thornton caught a demo at a local Amiga dealer and was soon a new Video Toaster owner. However, the Toaster's main function, video switching, took a back seat as far as he was concerned; it was the 3-D rendering package, Lightwave, he was really after.

After a short while, Thornton was pushing Lightwave's limits. His goal was to make a space ship the same way he had done for other movies, trying to make it as real as possible. It took him a month to make what Paul calls "the great green ship," but he was convinced that Lightwave could generate acceptable computer graphics.

While still tinkering with Lightwave, Thornton kept sending his creations to NewTek and eventually got hired to work on Todd Rundgren's Video Toaster-based music video *Theology*.

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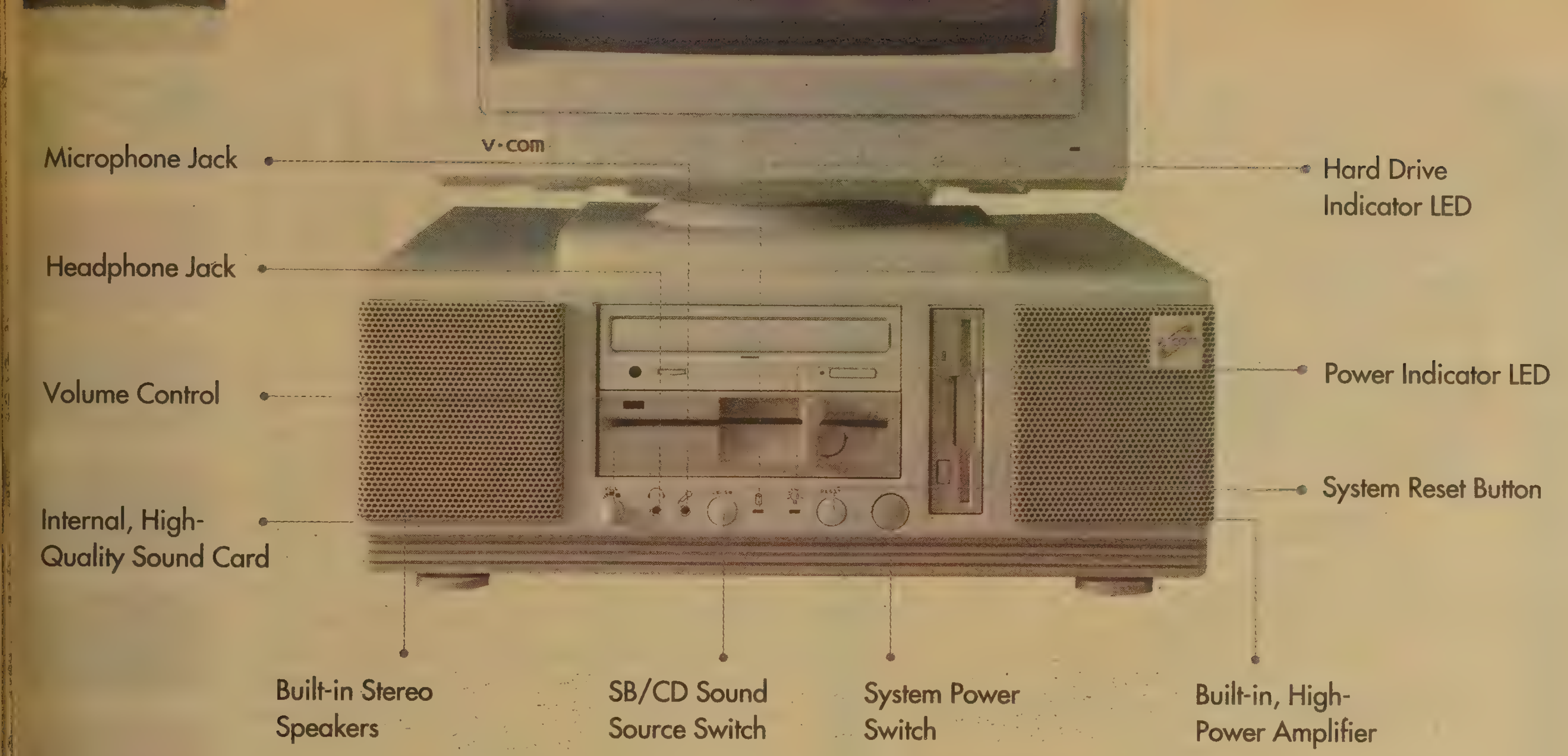

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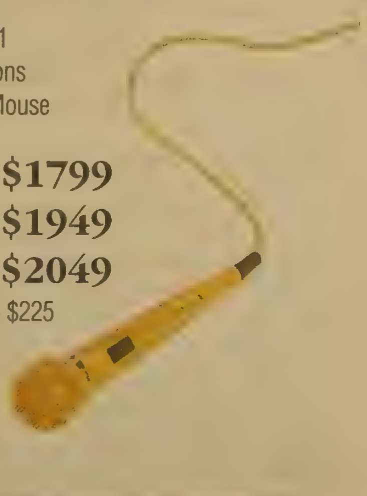

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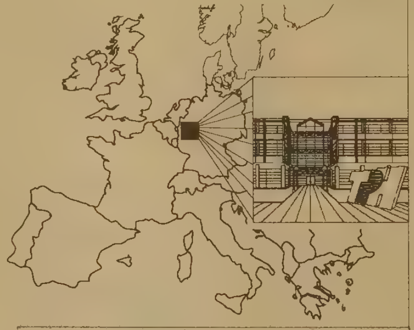

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This in turn led to his introduction to the author of Lightwave, Alan Hastings.

Prior to the start of the *Babylon 5* project, there were in-depth conversations with Hastings. At the time, rendering speed was dog-slow and appeared to be an insurmountable obstacle to Lightwave's use in actual production. According to Thornton, "Alan just trashed himself. I don't know if the guy slept for three or four months." The work paid off in improved image quality and, as Thornton put it, "made it live and work." Rendering time was cut from hours to minutes. Not only did he optimize it, he also enhanced it and added custom effects just for the project.

My favorite new effect is called "lens flare." Lens flare normally results from reflections of light on a camera lens. Foundation's version of Lightwave reproduces this faithfully and—more importantly—believably. It's a somewhat subtle effect, but that subtlety yields a more believable result. This and other new effects—some not available in any other package on any desktop platform—will reportedly be part of the next major release of Lightwave.

Paul Beigle-Bryant is Foundation's equipment expert. Previously, he was the MIS controller for the Industrial Bank of Japan and ran their computer operations. His major responsibility now is making sure Foundation Imaging's equipment is working—or as he puts it, "I'm the one walking around with a screwdriver in his pocket."

A total of twelve Amiga 2000s are used, with eight dedicated to rendering. Each Amiga is equipped with an RCS Fusion-Forty '040 accelerator and 32MB of RAM; they all have Ethernet cards installed and are connected together using a Novell network and Oxxi's Netware product. Using a single control text file, Beigle-Bryant can control all of the Amigas and direct them to render the proper frames. Using ARexx, each computer looks to the control file for instructions. "At any moment in time I can say, 'What are you guys up to?' and they'll come back and say, 'This is what we're doing.' The way that it is built, we can run up to a hundred machines, theoretically."

Even with 32MB of RAM, there is still a limit to the number of objects that can be rendered in a single scene, especially when the Babylon 5 space station is used. This limitation is sidestepped by compositing rendered images over one another. Basically, within the memory limitation, objects are rendered a group at a time. When the second group is rendered, the previously rendered images are loaded as background images. Since this is all done digitally, there is no generation loss. As a result, this technique can be used an unlimited number of times.

Beigle-Bryant showed me most of the scenes that would be included in the show on his Sony recordable optical disk machine. Being able to view the animations frame by frame or full-motion was a treat for me. He commented on one particular animation that involved a ship entering a docking bay. The shadowing and interaction of various lights in the scene would be especially difficult and costly if done with models.

Another very impressive shot started with the camera looking through a window with live action. The live action was actually mapped onto a polygon in Lightwave behind the window frame. The camera then slowly pulls back showing the entire space station and various other plan-

Continued on page 158

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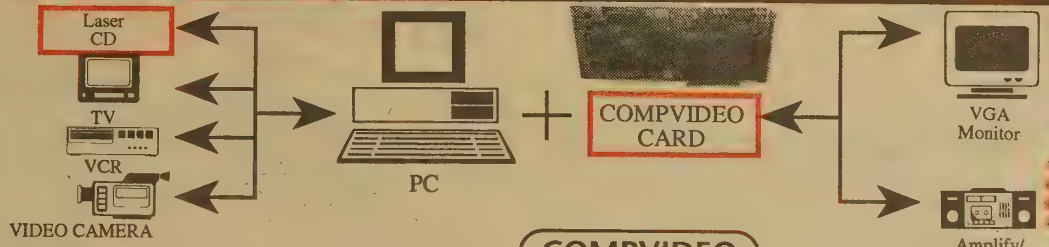

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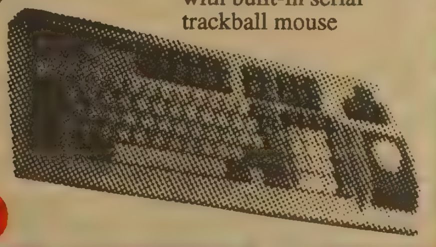

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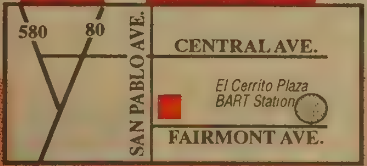

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ets and stars. Lightwave was not the only Amiga program used for special effects, however. The Foundation team also depended on ASDG's Art Department Pro and MorphPlus for various image processing. MorphPlus was used to distort people's faces in certain scenes. These moving morphs were done over a series of images, so you can see the actors move as the morph takes place. Moving morphs are very time-consuming, but when they're done right, the result is incredible. (It is important to note that many morphs that you see are actually still morphs; that is, there are only two images, a source and target image. Movement is artificially induced by having the components in the source and target images in different positions.)

FOUNDATION: THE FUTURE

Thornton and Beigle-Bryant give a lot of credit for getting the job done to Shannon Casey. As the producer for the company, she handled much of the busy work and organized the players to get the project out the door—on time and on budget.

The future impact of Foundation's technical achievement could be profound. Consider this: with an Amiga and the Video Toaster, someone at home could recreate the exact same special effects used in a major production.

The rub is, however, you need a lot of talent to create 3-D models approaching the magnificence of Ron Thornton's. Furthermore, it might take you quite some time to render all of the frames on a single Amiga versus Foundation's eight networked '040-equipped Amigas. Not everyone has an optical disk recorder to create the animations, not to mention gigabytes of disk storage space.

Not withstanding this, you can still create some jaw-dropping animations for home or semi-professional use using a more conservative system built around an Amiga, a 3-D rendering program, and Digital Creation's DCTV.

When I commented about the fact that now everybody will be doing *Babylon 5* stuff at home, Thornton smiled and quipped, "The more that get better, the more we can hire." ■

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LTE 386S/20	2 MB	121125-001	119
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Lite 20/25, Contura	2 MB	129769-001	105
	4 MB	129769-002	155
	8 MB	129769-003	295
Portable 386	1 MB	107651-001	109
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SLT 386	2 MB	118304-001	119
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Deskpro 386S (E. Bd.)	4 MB	113634-001	239
	4 MB	112534-001	169
Deskpro 386/20e, 25e (E. Bd.)	4 MB	113645-001	239
Deskpro 386/20, 20e, 25e, 25	4 MB	113132-001	169
Deskpro 286N, 386N, 386SX/20, 386/25M, 486/33M, 486/25M, 486S/16M, Systempro, LT486SX/25S, 386/25S	2 MB	118689-001	95
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* Artist XJS 12-16	$2,195
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* Stealth 24X V-Local Bus	$ 195
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* HP Design Jet (A-E) 600 dpi	$7,095
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* HP 7595C (A-E)	$5,295
* HP 7576A (A-E)	$4,195
* HP 7575A (A-D)	$3,195
* HP 7570A (C-D)	$2,695
* HP 7475A (A-B)	$1,495
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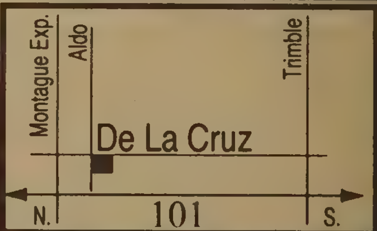

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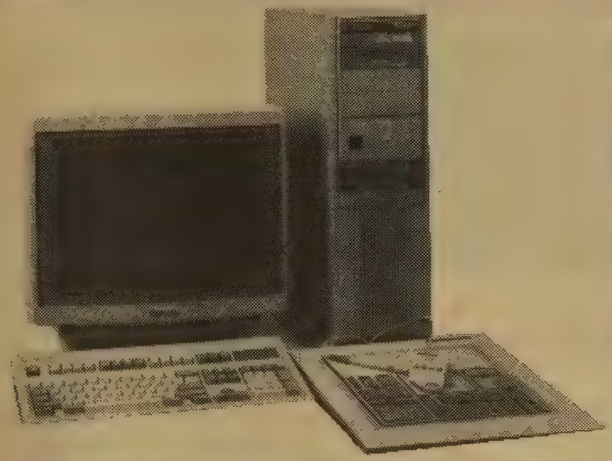

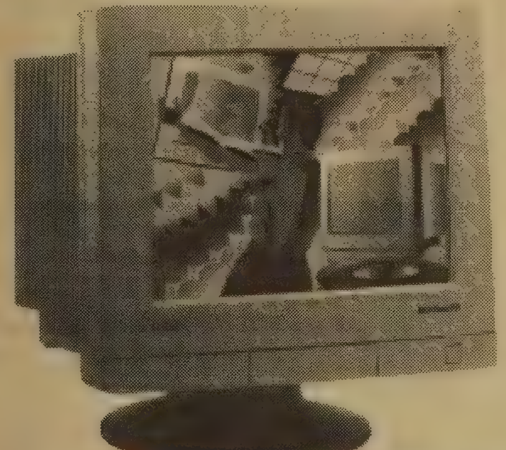

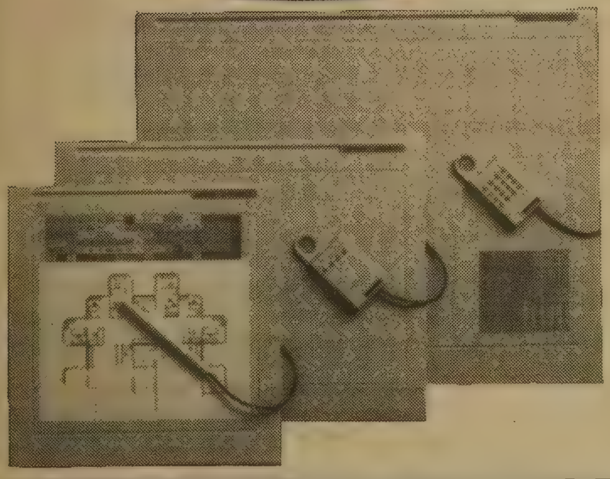

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- 2S / 1P ports, 101 Keyboard, Calcomp 12X12 digitizer, DOS 5.0.
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- #9GXI TI 34020 graphics card (Level 23).
- 1280 X 1024 resolution with 60 or 72 Hz refresh rate.

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- Intel 80486DX/33MHz CPU. 8MB memory, 256KB Cache memory
- TEAC 1.2MB & 1.44MB FDD, 210MB IDE Hard Disk Drive.
- 2S / 1P ports, Keytronics 101 Keyboard.
- Diamond 24X SVGA
- Toshiba CD ROM(200ms, 380KB/s), Media Vision Proaudio Spectrum16
- Creative Lab SPIGOT Continuous frame Capture board,Video for Windows
- Multimedia Toolbook, MediaBlitz, Asymetrix Make your point
- Mid size vertical case, 250W Power Supply, Mouse.

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- Intel 80486DX/33MHz CPU. 8MB memory, 256KB Cache memory
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- GT-300 Deluxe Full Tower w/Dual Fan & 300W P.S.
- DOS 5.0 w/Manuals
- Windows 3.1 w/Manuals
- Logitech Dexxa Mouse

486DX2-66/256K	**$2495**
486DX-33/256K	**$2225**
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UPGRADE	Ultrastor 34F VLB SCSI + HD	ATI Ultra Pro VLB/1MB	Maxtor 340MB	Maxtor 545MB	16MB RAM
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UPGRADE	Viewsonic 6FS 15"	Viewsonic 15 15"	NEC 4FG 15"	Viewsonic 7 17"	NC 5FG 17"
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- Standard Technology Super VGA Monitor (1024x768 w/.28 Dot Pitch)
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- Teac 1.2 MB 5.25" FDD
- 2 Serial, 1 Parallel, 1 Game port, I/O Card
- Maxiswitch or Focus 2001 101-Key Enhanced Keyboard
- Desk Top or Tower Case w/Power Supply
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- Maxiswitch or Focus 101-key Keyboard
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- Windows 3.1 w/Manuals
- Logitech Dexxa Mouse

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486DX2-66/256K	**$2295**
486DX-50/256K	**$2195**
486DX-33/256K	**$2045**

UPGRADE	Ultrastor 34F VLB SCSI + HD	ATI Ultra Pro VLB/1MB	Maxtor 340MB	Maxtor 545MB	16MB RAM
ADD	**$325**	**$150**	**$250**	**$550**	**$300**
UPGRADE	Viewsonic 6FS 15"	Viewsonic 15 15"	NEC 4FG 15"	Viewsonic 7 17"	NC 5FG 17"
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240 MB Quantum IDE	$355
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340 MB Maxtor IDE	575
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120 MB Colorado Tape Backup	205
250 MB Colorado Tape Backup	255
Creative Labs Multi-media Kit w/ Sound Blaster Pro, 4 CD Software Bundle, Creative Labs CD-ROM Drive, Windows 3.1 w/Multi-media Extensions V. 1.0	495

Monitors

Viewsonic 15	Non-interlaced 1280x1045 15" .28dp	$655
Viewsonic 6FS	Non-Interlaced 1024x768 15" .28dp	555
Viewsonic 6E	Non-Interlaced 1024x768 .28dp	355
Viewsonic 7	17" 1280x1024	995
Viewsonic 8	20" 1280x1024	1695
NEC 4FG	Non-interlaced 1024x768 15"	795
MAG MX15F	Non-interlaced 1024x768 15" .28dp	625

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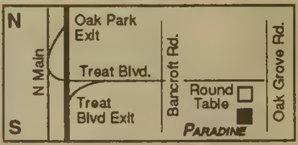
ATI UltraPro VLB w/2MB	$435
Diamond Viper VLB w/2MB	435
Diamond Stealth VLB w/2MB	195
Orchid 1280 VLB	195

Modems

US Robotics Sportster 14400 ext fax/modem	$259
US Robotics Sportster 14400 int fax/modem	239
Zoltrix 14400 int fax/modem	225
Zoltrix 9600/2400 int fax/modem	85



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---

1. What is your organization's primary business activity at your location?
☐ Aerospace
☐ Government
☐ Education
☐ Architecture, Engineering
☐ Communications: Advertising, Graphic Arts, Marketing, Public Relations, etc.
☐ Media: Broadcast, Film, Television, Publishing, etc.
☐ Manufacturing (computer, multimedia related): Computer/audio/video/audiovisual hardware, software, peripherals, etc.
☐ Manufacturing (other) ____________
☐ Dealer, retailer, distributor (other) ____________
☐ Accounting, Banking, Finance, Insurance, Real Estate
☐ Health, Medical, Legal
☐ Agriculture, Mining, Construction, Oil, Transportation, Utilities
☐ Research and Development
☐ Computer/multimedia contracting, consulting
☐ Consulting (other) ____________
☐ Other businesses and services ____________
☐ Other (please specify) ____________

2. Title: (Select one only.)
☐ Chairman/President/ Owner/Partner
☐ Vice President/General Manager
☐ Director/Department Manager
☐ Project Manager/Group Leader
☐ Creative Director/Designer/Producer
☐ Micro Manager/Coordinator/Specialist
☐ Network/Datacomm./Telecom Manager
☐ Manager/Supervisor (not listed above)
☐ Programmer/Analyst
☐ Architect/Engineer
☐ Specialist/Technician
☐ Scientist
☐ Educator
☐ Professional
☐ Consultant
☐ Representative
☐ Other (please specify) ____________

3. Department/Function: (Select one only.)
☐ Engineering/Technical
☐ MIS/DP
☐ Manufacturing/Operations/Production
☐ Administration/Management/Human Resources
☐ Accounting/Finance
☐ Advertising/Communications/Public Relations/Promotions
☐ Sales/Marketing
☐ Industrial design
☐ Corporate training
☐ Education
☐ Science/Research & Development
☐ Consulting
☐ Other (please specify) ____________

4. Which of the following operating systems are in use at this entire location? (Select all that apply.)

HW Operating Systems:
☐ DOS
☐ Windows
☐ OS/2
☐ Macintosh
☐ UNIX
☐ Other (please specify) ____________

LAN Operating Systems:
☐ Novell Netware
☐ Appleshare
☐ LAN Manager
☐ NFS
☐ Banyan VINES
☐ Other (please specify) ____________

5. Which of the following types of computers are used by you or members of your department or work group, or household. (Select all that apply.)

	Company	Household
IBM/Compatible 286 PC	☐	☐
IBM/Compatible 386 PC	☐	☐
IBM/Compatible 486 PC	☐	☐
IBM/Compatible Laptop/Portable	☐	☐
Other IBM Compatibles	☐	☐
68040 Macintosh	☐	☐
68030 Macintosh IIfx, IIci, IIcx, IIx, IIsi	☐	☐
68020 Macintosh II/LC	☐	☐
Macintosh Portable PowerBook	☐	☐
68030 Macintosh SE/30	☐	☐
Other Macintosh	☐	☐
Amiga	☐	☐
Workstation (HP, Sun, DEC, Silicon Graphics, NeXT, etc.)	☐	☐
Other Platform (please specify)	☐	☐

____

7. In which ways are you personally involved in your organization's decision to purchase these products? (Select all that apply.)

A. Multimedia-related hardware and peripherals
☐ Determine needs/features
☐ Evaluate brands
☐ Specify/recommend brands
☐ Specify/recommend vendors/suppliers
☐ Authorize the purchase
☐ Other (please specify) ____________

B. Multimedia-related software
☐ Determine needs/features
☐ Evaluate brands
☐ Specify/recommend brands
☐ Specify/recommend vendors/suppliers
☐ Authorize the purchase
☐ Other (please specify) ____________

6. Please indicate which of the following products you plan to purchase for household or company use? (Select all that apply.)

Multimedia-related Hardware /Peripherals	Company	Household
IBM/Compatible PCs	☐	☐
Macintoshes	☐	☐
Amigas	☐	☐
Workstations	☐	☐
Color monitors	☐	☐
Presentation monitors	☐	☐
Multimedia upgrade kits	☐	☐
Audio boards	☐	☐
Graphics boards	☐	☐
Digital/Analog video boards	☐	☐
MIDI sequencers/synthesizers	☐	☐
LCD display panels	☐	☐
Desktop scanners	☐	☐
Mice/joysticks/input tablets	☐	☐
Color printers	☐	☐
CD-ROM drives	☐	☐
Laser disc players	☐	☐
VCRs and VCR controllers	☐	☐
Video cameras	☐	☐
Laser printers	☐	☐
Color proofers	☐	☐
High-resolution scanners	☐	☐
Color scanners	☐	☐
Storage devices	☐	☐
Networking systems	☐	☐
Supplies/accessories	☐	☐
Color Copiers	☐	☐
Other (please specify)	☐	☐

____

Multimedia-Related Software	Company	Household
Authoring	☐	☐
Music composition/editing	☐	☐
Sound editing	☐	☐
2-D/3-D rendering/modeling	☐	☐
Animation	☐	☐
Desktop publishing	☐	☐
Draw/paint/image editing	☐	☐
Fonts	☐	☐
Presentation graphics	☐	☐
Clip art	☐	☐
Clip music	☐	☐
ip video/animation	☐	☐
Education application/titles	☐	☐
Electronic reference	☐	☐
Other (please specify)	☐	☐

____

8. During the next 12 months, will you specify, recommend, buy, or approve the purchase of multimedia-related hardware, peripherals, software, or services worth: (Select one only.)
☐ $1,000,000 or more ☐ $500,000 to $999,999
☐ $250,000 to $499,999 ☐ $100,000 to $249,999
☐ $50,000 to $99,999 ☐ $25,000 to $49,999
☐ $10,000 to $24,999 ☐ $5,000 to $9,999
☐ Less than $5,000 ☐ None of these

9. In the last 12 months, did you specify, recommend, buy, or approve the purchase of multimedia-related hardware, peripherals, software, or services worth: (Select one only.)
☐ $1,000,000 or more ☐ $500,000 to $999,999
☐ $250,000 to $499,999 ☐ $100,000 to $249,999
☐ $50,000 to $99,999 ☐ $25,000 to $49,999
☐ $10,000 to $24,999 ☐ $5,000 to $9,999
☐ Less than $5,000 ☐ None of these

10. How many people are employed in your entire organization, including all its branches, subsidiaries, and locations? (Select one only.)
☐ 1000 or more ☐ 500-999 ☐ 100-499
☐ 25-99 ☐ Less than 25

11. What areas in your company do you see using multimedia? (Select all that apply.)
☐ Training ☐ Product announcements
☐ Corporate presentations ☐ Sales and marketing
☐ Other (please specify) ____________

12. How do you usually buy computer hardware, software, accessories, and supplies?
☐ Through a local retail store ☐ Mail order
☐ Catalog ☐ Direct from manufacturer
☐ Direct from distributor ☐ Other (please specify)
____

Name: ____________
Address: ____________
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Thank you for your participation! Please fax or mail this questionnaire to (510)934-7351, 3470 Buskirk Ave., Pleasant Hill, CA 94523.

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Markets, Titles, And Other Pressing Issues

BY JONATHAN E.

Desktop multimedia for the home is still busy being born. The birth process has been difficult and is likely to remain so—the technology's potential is so attractive that early pioneers have often found little more than a "vapor market." Consider the fate of the HyperCard and CD-ROM-based *Electronic Whole Earth Catalog* (shipped a few short years ago) as an example of what happens when a product is brought to market when the technology is still evolving. New versions of HyperCard and the advent of System 7 made the CD-ROM inoperable without reinstalling earlier versions.

> The big issues to be addressed are **content, design, finance, and marketing**—exactly the same problems that other consumer media have faced—and, to a large extent, solved.

Some skeptics think we're still in that position with the consumer market. One prominent San Francisco publisher whose catalog has definite multimedia possibilities thinks that it's still too early to get into the market, for reasons including platform uncertainties, questions of content and marketing, and general direction. Independent entrepreneurs who have bravely plunged ahead have found financing to be a constant dance of courtship.

So far the multimedia market has been mostly in custom development for training, information kiosks, product presentations, and other areas where content is fairly rigidly defined, and marketing is not a matter of getting your product into the hands of the general public but of selling your services to a corporate client. However, we are promised a consumer multimedia market, comparable to book publishing, music, film, or video.

Leaving aside the questions of hardware and software, the big issues to be addressed are content, design, finance, and marketing—exactly the same problems that other consumer media have faced—and, to a large extent, solved.

At a recent meeting of the International Interactive Communications Society (IICS) in San Francisco, these issues came up for discussion. Frank Wiley of the San Francisco Bay Area Book Council put the evening together to explore the relationship between traditional book publishing and what-might-be for multimedia. Todd Wade, codirector of marketing for The Voyager Company, and Rick Smolan, photographer and producer of *From Alice to Ocean,* have both dealt with

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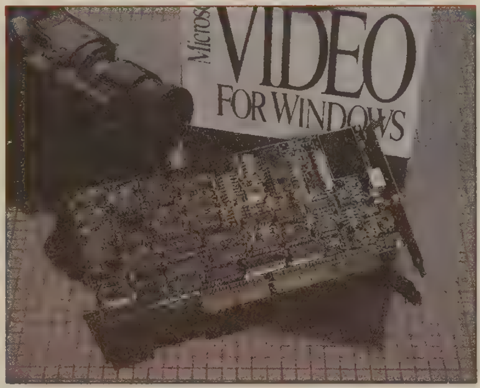

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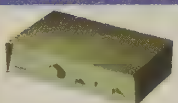

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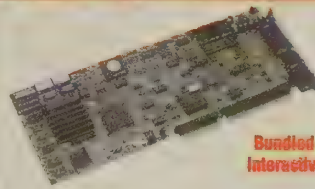

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The fundamental hardware technologies for multimedia—including fast processors, audio support, high-resolution color displays, and CD ROM drives—exist today. In addition, new software such as Microsoft Video for Windows and Apple's QuickTime provide built-in multimedia capabilities to the general computing environment. Authorware Professional is multimedia authoring software that takes full advantage of these capabilities and allow the user to easily create quality content that extend the possibilities for multimedia beyond what other applications are providing today.

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> Voyager's Todd Wade showed an annotated version of *A Hard Day's Night*, due on CD-ROM later this year. "This," he remarked, "is the kind of title that gets people in video channels very excited."

these difficulties and were the featured speakers

In introducing the speakers, Wiley offered a brief analysis of the state of multimedia, in particular noting that cash flow and sales were major hurdles for most multimedia developers. He suggested that publishing offers a possible financial model for multimedia because of some similarities in sales figures. Many books only sell several thousand copies.

REALITY CHECK NO. 1: VOYAGER EXPANDED BOOKS

Wade explained his job as begging for shelf space for Voyager's titles, a formidable task in a new, small market—*Jurassic Park*, Voyager's top-selling title, has sales "north of three thousand units." Most of Voyager's sales are at trade shows and through mail order outlets, although "independent book store channels are increasing rapidly."

The series currently offers over thirty titles; they're designed to run on PowerBooks, although they will also run on any Macintosh with a large-screen (640 x 400 pixels) display. They require system software v6.0.7 or higher, as well as HyperCard 2.1 or HyperCard Player.

Expanded Books are shipped on 1.4MB high-density floppy disks—a fact Wade repeated three times to some appreciative laughter. You don't need a CD-ROM to enjoy at least some of the fruits of multimedia.

Wade explained that the digital rights to the content were licensed from the original publishers. Much attention had been devoted to making the books pleasant to read on the screen, primarily through traditional typographical techniques; the text is laid out in pages rather than scrolling text fields. With an Expanded Book, you can make your own comments in the margin, "dog-ear" or "paper clip" pages, search for words or pages, or switch to larger print, as well as find annotations with text, pictures, or sound.

The Expanded Book Toolkit allows you to create your own expanded book from text. Judging by Wade's demo, this an impressive product and the probable focus of a future column. He also demonstrated the *Poetry in Motion* CD-ROM "as a way of linking text to another medium to create a more dynamic book." This product has QuickTime movies of poets reading their work, and in some cases an interview, as well as the original text of the poem and the text of the performance, which are sometimes quite different. He also showed a future product from Voyager, an annotated version of *A Hard Day's Night*, due on CD-ROM later this year. "This," he remarked, "is

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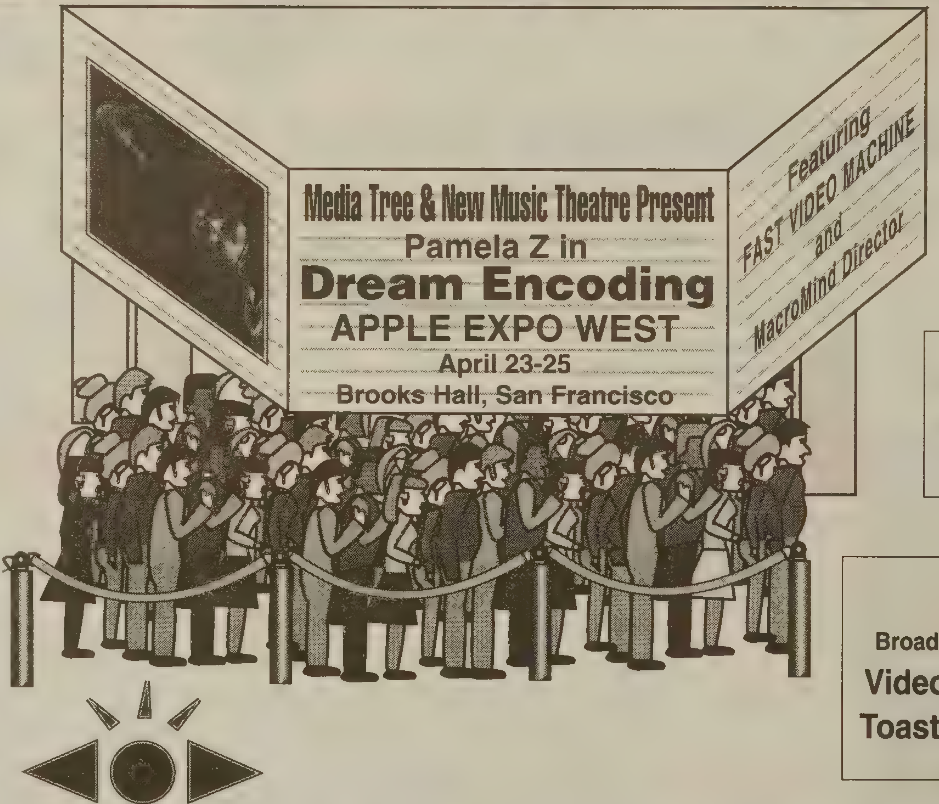

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REALITY CHECK NO. 2: FROM ALICE TO OCEAN

Rick Smolan opened his part of the program by saying that he has "a lot of friends that are in the traditional side of publishing who are not quite sure that electronic publishing is a good idea. And I'm not actually quite sure which side of the fence I'm on."

Smolan has had a successful career as a photographer, working for *National Geographic, Time, Life,* and *Newsweek.* However, he explained, he found that he and other photographers shared the same frustration of spending a month on the road for a story, shooting "two or three hundred rolls of film," only to have twelve photos show up in the magazine. He came up with the idea of the "Day in the Life" books, which again lead to many unpublished photos.

He saw the expanded capacity of electronic storage as a solution, allowing the use of more photos. However, when he first encountered multimedia a couple of years ago, unexpected interface problems surfaced. Creators and users alike "hated the dictatorship of traditional media, that the way the story was told was in linear fashion, that you could only read it from beginning to end. Basically it was like a highway from San Francisco to Los Angeles with no exits; all you could do was get on and get off.

"What these new multimedia creators wanted to do was to say, 'We don't want to tell you where to go. We're just going to plunk you down in the middle of the desert or the middle of the forest and we're not going to give you any road maps, there are no paths, and you can go anywhere you want.' I got bored after ten minutes of using the multimedia or interactive things that first came out—I didn't know where I'd been, I didn't know where I was going, I didn't know what I'd missed, so I turned it off."

Later, he realized the importance of organization and filters. "The reason I read the *New York Times* or the *Wall Street Journal* or an author is because that author, or that writer, or that magazine, has taken all the facts in the world or all the facts of that particular story and has decided what's important and what's not important. The last thing I want is for someone to hand me a disk and say, 'Here's 600 megabytes of unedited information.' Who needs it? What we want is information presented in a way that's useful to us.

"What's now starting to happen with companies like Voyager is that they're giving us multiple paths through a set of information or through a story. But there are still paths there. Somebody still decided what was important and what wasn't."

The end result of this thought process was *From Alice to Ocean,* a coffee table book about a woman's journey, with a dog and several camels, through the western deserts of Australia. It comes with both a CD-ROM and a Photo CD tucked into the back. The book is published by Addison Wesley. Apple financed the CD-ROM production.

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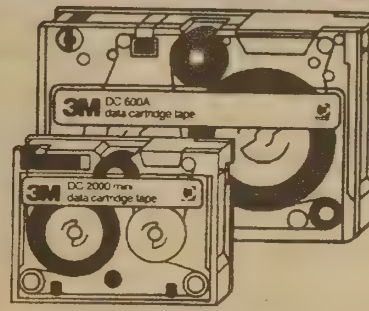
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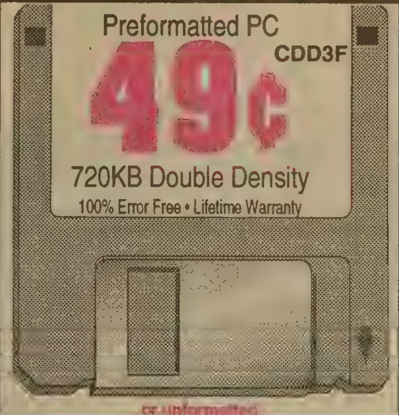

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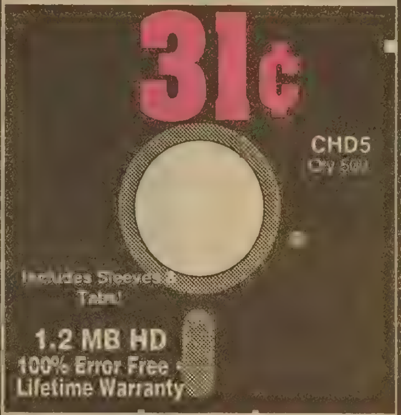

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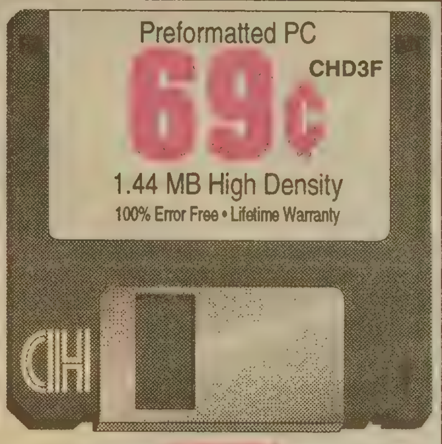

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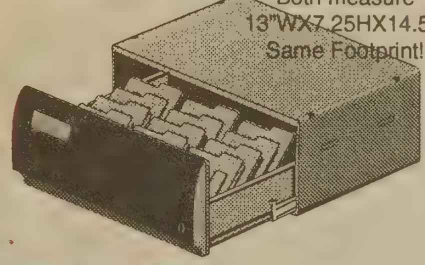

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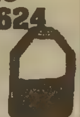

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Smolan said that digitally scanning the photos for inclusion in the Photo CD cost only about $2000. The principal advantage of the CDs is that they allow the inclusion of additional photos and QuickTime movies; they also include small quantities of other supplemental material.

A major advantage of the Photo CD is that you don't need a computer to use it and the Photo CD player is relatively cheap. This approach to getting multimedia into the home is sort of like flying in under the radar.

OTHER PERSPECTIVES

Later in the evening, the speakers were joined in a panel discussion by Vicki Morgan of Foghorn Press, Mark McCormick of Addison Wesley, and Neal Sofman of A Clean Well Lighted Place for Books.

Morgan represented traditional publishers and their concerns with multimedia production—it's important to them they make money out of the deal and that the multimedia developer will be around in the future. Sofman explained the realities of bookselling, what it takes to get shelf space, and the possibilities for multimedia titles in bookstores. McCormick covered the concerns of textbook publishers, including the fact that their target market is often using antique technology.

Wiley's advice to would-be multimedia-ers is that jobs are scarce but opportunities are not. If you want to get involved, your best first steps are to go to meetings like this, go to SIGs, meet people who are working out some of the difficulties in the field, take classes, and to join the IICS. There's an IICS meeting the second Tuesday of every month, alternating between San Francisco and the South Bay. Members attend free, non-members pay $10. The IICS also publishes a monthly newsletter and a directory of members. Annual membership is $75.

UPDATES & NEWS

For further insight into electronic book publishing, look into Sumeria's Electronic Book Fair, to be held August 26 and 27 at the Mark Hopkins

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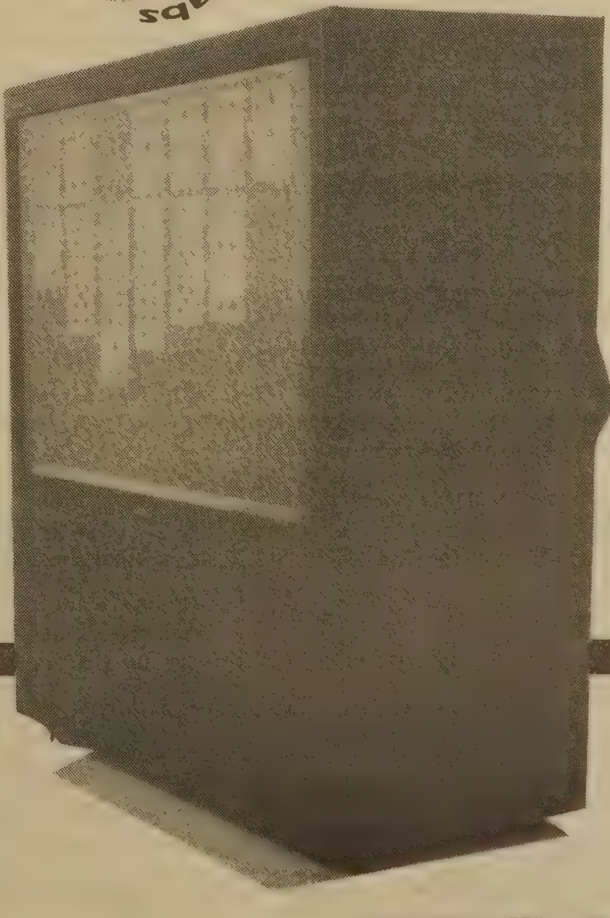

InterContinental Hotel in San Francisco. There will be both an exhibition of electronic books and information sessions to answer questions about CD-ROM publishing. For information contact Sandy Butler at Sumeria, 329 Bryant St., Ste. 3D, San Francisco, CA 94107; phone (415)904-0811; fax (415)904-0888; or AppleLink SUMERIA.

For those readers who asked for a list of multimedia developers in the Bay Area: the March issue of *California Business* magazine contains a listing of what they and the IICS consider the top fifty multimedia companies in California. It's split 24/26 between customer developers and companies working on education and entertainment titles. This isn't a complete listing, but it's a handy resource. Back issues are available for $5 from California Business, 221 Main St., San Francisco, CA 94105-1919. The information is also available on disk as a database. Call 1-800-927-1100 to order.

> **Rick Smolan:** "The last thing I want is for someone to hand me a disk and say, **'Here's 600 megabytes of unedited information.'** Who needs it? What we want is information presented in a way that's useful to us."

In addition to the schools mentioned in the last column, University of California Extension offers classes in Santa Clara and Zakros InterArts has classes in San Francisco. For info on the UC Extension classes, write or phone University of California Extension, Science and Technology Department, 3120 De la Cruz Blvd., Santa Clara, CA 95052; (408)748-7375. Zakros InterArts can be reached at 614 York St., San Francisco, CA 94110; (415)282-5497. ■

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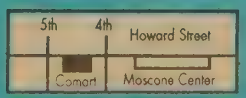

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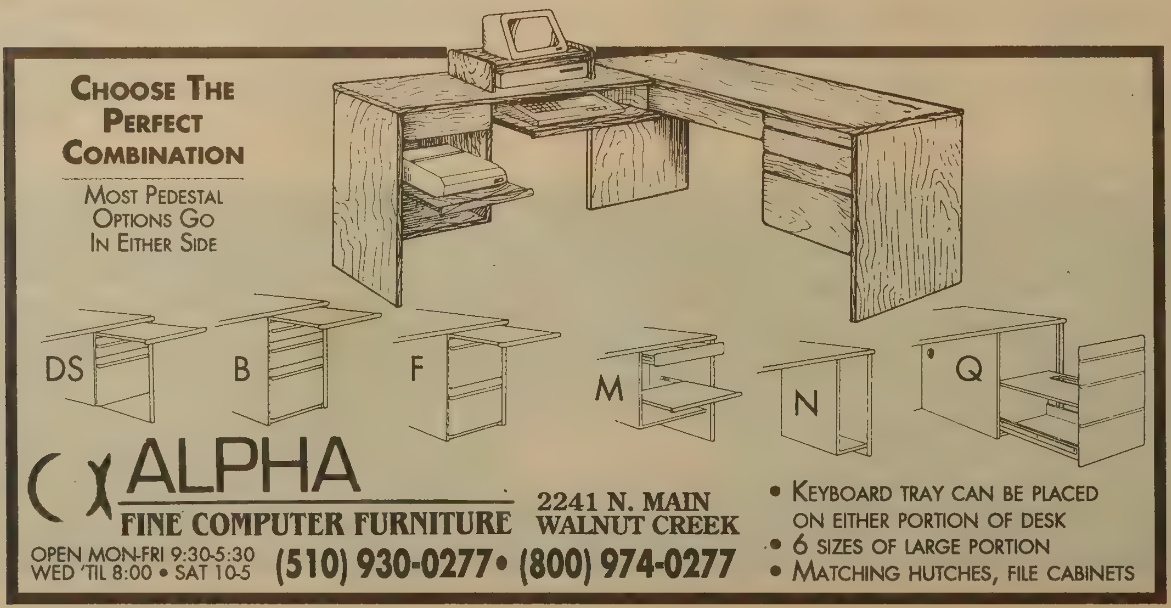

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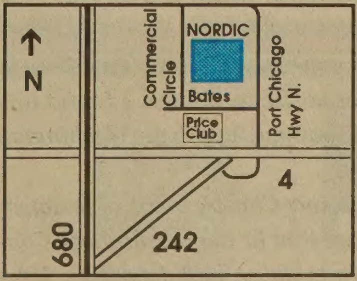

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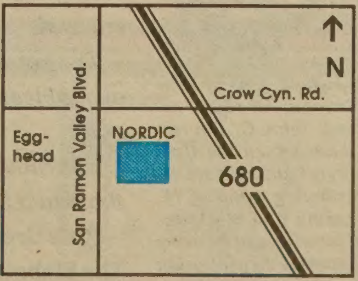

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The Infamous Do-It-Yourself Column

Or So Many Good Ideas Out There It Makes My Brain Itch

BY JOHN C. DVORAK

DVORAK'S LAST COLUMN

There's no reason you, the reader, can't become a reputed columnist. The ideas are all there, online, in the newspapers, and heard over the phone.

For example, I get a phone call from John Markoff of the *New York Times*. "Dvorak," he says. "IBM just announced a new CEO this morning."

"Oh, really? Who?"

"Dr. Jack Kevorkian!! Hehehehe."

Apparently it was a joke floating around the *Times* office. But it also is the basis of a good column: joke CEOs for IBM is a start. But how about taking every computer company and naming a wacky CEO to head it? Surely someone with a sense of humor can crank out one thousand words with that concept.

The online world is a gold mine for column ideas. Here's some offhanded comments from various online gurus. Each one could easily become a column if researched or extrapolated. They come in about four major forms.

The Criticism: *It is amazing that IBM hasn't trumpeted the fact it uses DMA for serial communications on the PS/2 line, and that they all have the 16550 UART. It is equally amazing that not a single magazine has noticed this either, and commented favorably or otherwise.* **—Earle Robinson**

The Cynical Observation: *The BASIC that was on the PDP-10 back in the early '70s was from First National City Bank (or something like that). It was an interpretive BASIC and looked/acted/felt just like the first BASIC that Gates released.*

The source code for that PDP-10 BASIC was available online and was never really guarded at all.

The coincidence between the similarities of those two BASICs is really rather amazing.... **—Ross Greenberg**

The Elaborate Query With An Agenda: *I was wondering if you could answer a question for me: Why is there no dependable standard for asynchronous port access on a PC? Every other I/O operation on PC systems has a workable INT level access point. DOS File and Device I/O, Parallel Port I/O, EMS/XMS memory I/O, and NetBIOS/Novell IPX network I/O all have standard INT level access which makes diagnostic and add-on utilities such as print spoolers, file access loggers, remote I/O utilities, and multiuser/multitasking managers easy to design for these I/O operations. The only serial INT level standard that was supplied with the PC when it was introduced are the INT 14h hooks that were mainly designed for serial printer access and are* completely unusable by modems or other high-speed two-way serial devices. *Hence, any communications software that's worth its salt has to interface directly with the UART chip and the system interrupt controller making it next to impossible to cooperate with other communications software that might be running in the system. The only major exception to this is the FOSSIL INT 14h extension standard that has evolved from the BBS community. This standard is not perfect, but it's the best 80x86 asynchronous standard available!*

Microsoft is probably the only entity that can really push a globally accepted asynchronous access standard. What's keeping them from releasing an INT 14h software extension (or other standard) that we can all build upon? As I see it, the serial ports are the number one biggest I/O management headache when dealing with PCs. Maybe there's someone who's already working on this, but if not, it sure seems like there ought to be! **—Dave Bennett**

You also find humorous ridicule and other forms of messages, which can all lead to a column.

If this fails you can surely find something in a newspaper article to discuss. I found this little Daniel Southard ditty in the *Washington Post*:

Harry Wu, former Chinese political prisoner, has a message that he hopes will shock Congress, the White House, and the public: Some of the goods Americans buy—including even the clothes they are wearing—may have been manufactured in the harsh conditions of Chinese labor camps and imported here in violation of US laws.

This was later extrapolated into a report on a couple of network TV news shows, but is still a good topic. But with this kind of article you have to stretch it *into* the high-tech field by doing a lot of research. Most of the Chinese labor slaves make little dolls and gizmos that go to hamburger chains or toy makers.

More direct is the obscure high-tech news story that the writer has to dig up by reading foreign magazines and newspapers. Here's an excerpt from the *Australian*, one of Sydney's newspapers. It's from the November 23, 1987, issue which gives you some kind of indication as to the database capabilities of my system and a sense of how long you may want to keep things—just in case you someday need them as in this case where I need a perfect example.

The article had a banner headline which read.

SABOTEUR TRIED TO BLACK OUT AUSTRALIA

The heart of Sydney's business district remains in chaos after a dangerously well-informed saboteur wreaked havoc on the city's fragile telecommunications system in an attack intended to destroy [Australian] Telecom's operations nationwide...Investigators described the sinister saboteur as a lone former Telecom employee with expert knowledge of the underground cables network...The attacker entered the underground tunnels and severed 24 of the 600 heavy cables in 10 carefully selected locations. The bizarre attack knocked out 35,000 telephone lines in 40 Sydney suburbs and brought dozens of...ATMs, POS, stores, telex, facsimile and betting office services to a standstill...

It goes on an on with grim details, few of which were covered by the US media. Surely there are a number of columns and articles which a story like that could generate. Maybe even a book.

Finally, the last column technique is to take all your notes and make them into a column about how to make columns. It's easier and just as entertaining.

At least I think so. ■

Copyright © 1993 by John C. Dvorak. All rights reserved. John C. Dvorak graduated from the University of California. He is a contributing editor of PC Magazine *and* MacUser, *and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

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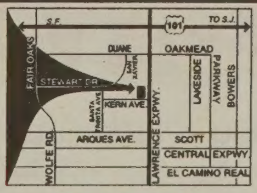

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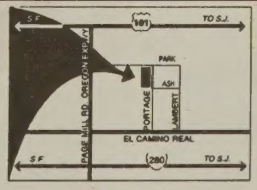

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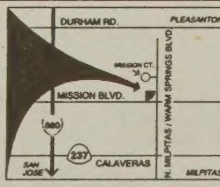

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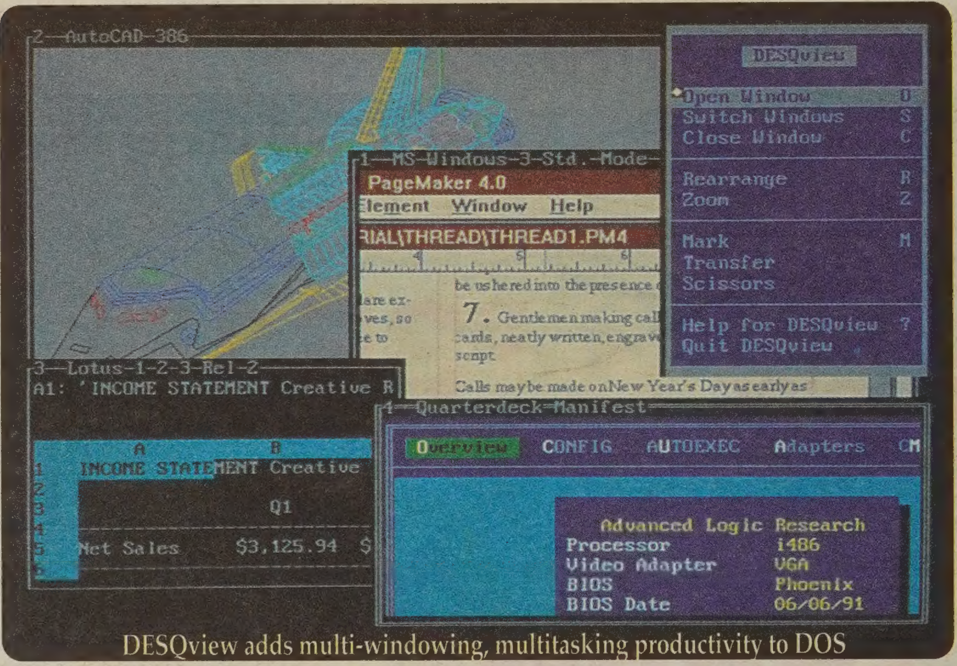
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